

**A PHYLOGENETIC ANALYSIS AND RECLASSIFICATION  
OF THE GENERA OF THE *POCOCERA* COMPLEX  
(LEPIDOPTERA: PYRALIDAE: EPIPASCHIINAE)**

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*Abstract.*—Based on a worldwide survey of representatives of epipaschiine genera, a monophyletic subset is identified and designated the *Pococera* complex. Its monophyly is defended by a prominent saccus in the male genitalia and a long, narrow ductus bursae in the female genitalia. The complex contains approximately 300 species that are restricted in distribution to the Western Hemisphere. This phylogenetic study of the complex establishes its monophyly, re-examines the genera included, establishes their monophyly, and estimates their relationships.

The cladistic analysis is based on 22 taxa and 65 characters of the adult head, genitalia, and wings. *Lacalma* Janse and *Macalla* Walker are used as outgroups. The PHYSYS program generated three equally parsimonious trees with a length of 144 and consistency index 0.52. The stability of the estimated trees were tested with successive weighting and sequential removal of taxa. The tests showed the position of the root to be somewhat uncertain. Nevertheless, the topology of the estimated trees is shown to be stable in most manipulations despite the fact that most of the groupings are supported by very few characters.

A taxonomic synopsis presents the results of the examination and the definition of the genera as monophyletic. Twenty-two genera of the *Pococera* complex are diagnosed and six new genera are described. Representatives of each genus are illustrated by line drawings and photographs. Larval host use patterns are briefly reviewed. A nomenclatural summary is provided, including taxa to be removed from the Epipaschiinae.

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The Epipaschiinae are one of five subfamilies currently placed in the Pyralidae (Solis and Mitter, 1992). The monophyly of the Pyraloidea and the Pyralidae are well supported in the literature (Solis and Mitter, 1992) and is not in dispute. The monophyly of the Epipaschiinae was established and discussed previously (Solis and Mitter, 1992), but relationships within this subfamily are not well understood. The Epipaschiinae historically include approximately five hundred species that are primarily pan-tropical in distribution. They occur from the northern periphery of Australia north into the Oriental Region, including temperate China, and to the southern limits of the Palearctic. They also are found south of the Sahara to South Africa and in the Western Hemisphere from the eastern temperate forests to northern Argentina.

Information is limited on the life history and immature stages of the Epipaschiinae. The morphology of the immatures is not well known (Allyson, 1977; Passoa, 1985). The larvae are known to be leafrollers, leaf tiers, and leafminers. Some species are believed to be host specific, for example, *Epipaschia superatalis* Clemens on poison ivy. Other species, such as *Phidotricha erigens* Ragonot, have been reared on a wide variety of hosts, including loquat, tamarind, lima beans, sorghum, and corn. As

illustrated by hosts of *P. erigens*, some species in the tropics are economically important.

The Epipaschiinae have been the subject of very few comprehensive morphological, and no modern phylogenetic, studies. Hampson (1896) was the first to study the genera on a worldwide basis; he used wing venation and external characters of the head. Janse (1931) conducted a survey of the genera and was the first to use male genitalia and secondary sexual characters of the head after removing the scales. He often investigated only one specimen of one species, the type species, or a species he had access to, and at times depended on opinions about type species by other taxonomists. He delineated genera based on male characters of the genitalia, head, and wings. The lack of modern, comprehensive studies in the Epipaschiinae is evident in a list of species (see Nomenclatural Summary) which, during the course of this study, were found to belong in other subfamilies.

To delineate major monophyletic groups, a survey of the major genera of the Epipaschiinae was conducted. First, the exact size and content of the Epipaschiinae on a worldwide basis were determined by developing lists of genera and species for the Western Hemisphere and for those found elsewhere. Fletcher and Nye (1984) listed fifty-four genera and I found 385 species outside the Western Hemisphere (Solis, in press). In the Western Hemisphere fifty-eight genera were listed by Fletcher and Nye (1984) and I found 370 species.

Second, representative specimens of genera were dissected and studied. From the Western Hemisphere a male and female specimen of the type species of forty-five genera were dissected. Other species examined in each genus are listed in the generic synopsis. Outside the Western Hemisphere almost all type species were seen and at least one male and one female of each type species of twelve major genera were dissected. In the larger genera examples of more than one species was dissected, and some species were dissected whose generic affinity was not known.

The most clearly evident monophyletic group identified by this survey was a large set of genera that is found only in the Western Hemisphere and is here termed the *Pococera* complex. This is not to be confused with Pococerinae, a synonym of the Epipaschiinae. This complex comprises forty-seven generic names and approximately three hundred specific names. The complex includes several large and economically important genera such as *Pococera* Zeller and *Phidotricha* Ragonot. The complex is named after *Pococera* because the genus is the largest occurring in North America and is commonly associated with the subfamily name by lepidopterists.

This study is a generic re-classification and phylogenetic analysis of the *Pococera* complex based on a morphological study of the adults, and it will serve as a starting point for a larger study on the relationships within the subfamily. The goals of this study were to confirm or disprove the monophyly of the *Pococera* complex and of the included genera. It also estimated the relationships among the genera and provided a generic synopsis and description of the new genera of the complex.

#### MATERIALS AND METHODS

Adult specimens (and/or photographs) were provided by the following museums and private collections: AMNH—American Museum of Natural History, New York, USA; ANIC—Australian National Insect Collection, CSIRO, Canberra, Australia;

BMNH—The Natural History Museum, London, England; CNC—Canadian National Collection, Agriculture Canada, Ottawa, Canada; CNP—Carnegie Museum, Pittsburgh, Pennsylvania, USA; CUIC—Cornell University, Ithaca, New York, USA; INHS—Illinois Natural History Survey, Champaign, Illinois, USA; LACM—Los Angeles County Museum of Natural History, Los Angeles, California, USA; MNHP—Museum National d'Histoire Naturelle, Paris, France; MEM—Mississippi State Museum, Starkville, Mississippi, USA; MCZ—Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, USA; TAMU—Texas A&M University, College Station, Texas, USA; TMP—Transvaal Museum, Pretoria, South Africa; UCB—Essig Museum of Entomology, University of California, Berkeley, California, USA; UMO—Hope Museum, Oxford, England; USNM—National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA; ZMHB—Zoologisches Museum, Humboldt Universität, Berlin, Germany; Vitor O. Becker, EMBRAPA, CPAC, Planaltina, Brazil; Daniel H. Janzen, University of Pennsylvania, Philadelphia, Pennsylvania, USA; Roy O. Kendall, San Antonio, Texas, USA; Edward C. Knudson, Bellaire, Texas, USA; Ronald H. Leuschner, Manhattan Beach, California, USA; Bryant Mather, Clinton, Mississippi, USA.

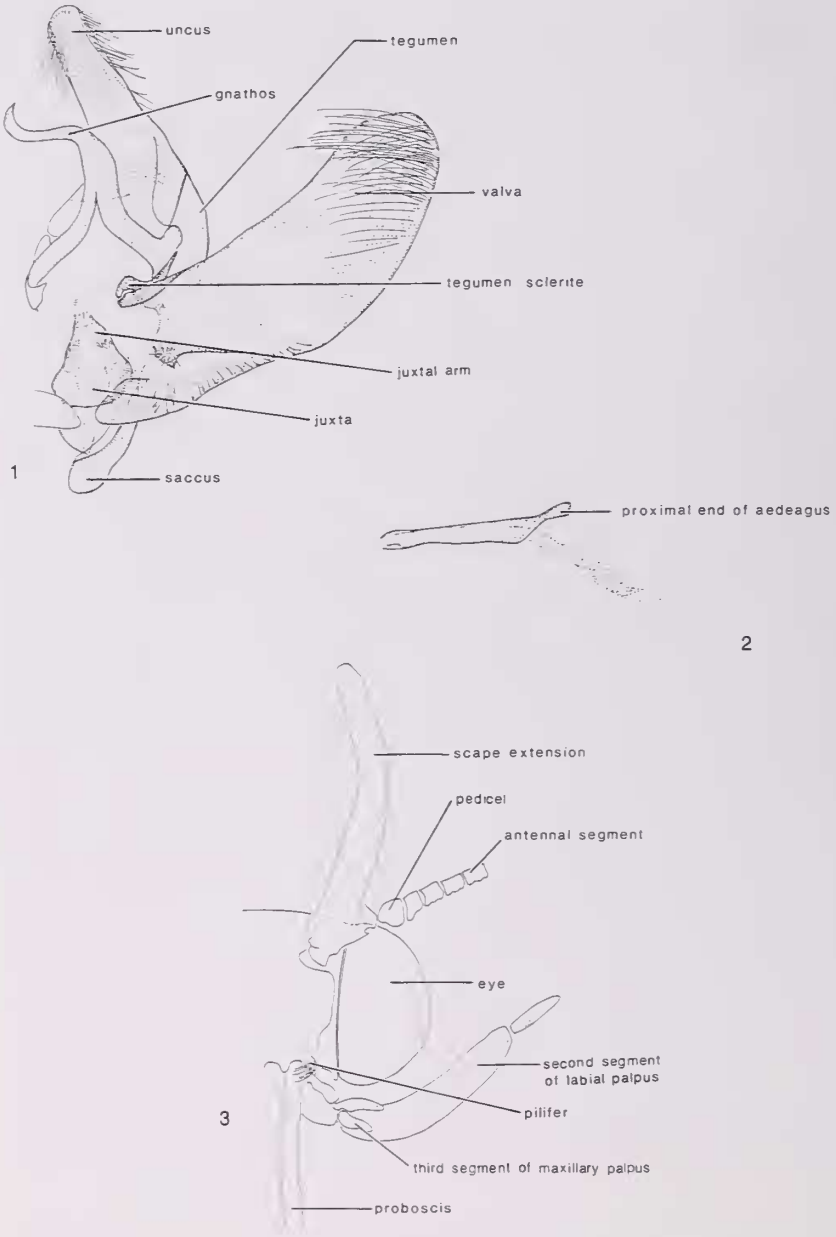
Most of the type material is located in The Natural History Museum, the National Museum of Natural History, and the Carnegie Museum. When the only known specimen of the species was the holotype, or when material was not available, a photograph of the type was used. After the *Pococera* complex was provisionally identified, 47 genera and 349 species were hypothesized to belong to the complex. The type species of each genus was dissected, and at least one male and female of approximately 82% of the species in *Pococera* complex were dissected. This figure does not represent species designated as junior synonyms and species in the checklist based on photographs of the types. Species were studied by dissection, or were included in the genus based on a photograph.

Most of this study was carried out using a Wild M5 stereoscopic dissecting microscope, but preliminary/exploratory morphological studies were carried out with a compound light microscope and a scanning electron microscope. Line drawings of representatives of each genus are provided because most of the taxa have never been illustrated. The drawings were executed using a Wild M5 stereoscopic dissecting microscope with a camera lucida attachment.

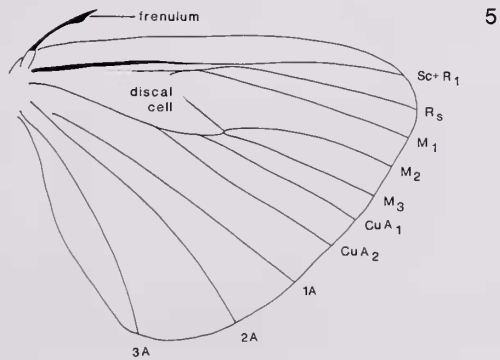
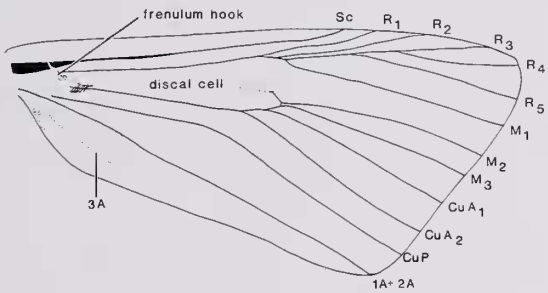
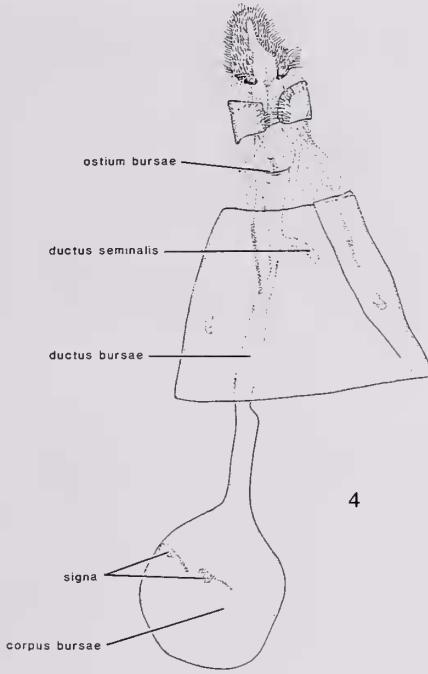
Head, legs, wings, abdomen, and genitalia of adults were dissected for this study. Heads were cleared in KOH, dissected in water, and temporarily stored in 75% alcohol. They were mounted in balsam on concavity slides, frontal side up. Wings were bleached, stained with eosin-Y and mounted in balsam. Genitalia were cleared with cold KOH and dissected in water. They were stained with chlorazol black and stored in glycerin until ready to be mounted in balsam. The genitalia were mounted on slides ventral side up. The aedeagus is small, so no attempt was made to inflate the vesica.

Terminology applied to the head (Fig. 3) and to wing veins and markings (Fig. 5) corresponds to Forbes (1923) and Wootton (1979), respectively. Terminology applied to the genitalia follows Klots (1956) and to the tympanic organs follows Maes (1985) (Figs. 1, 2, 4).

To determine the relationships of the genera of the *Pococera* complex a cladistic analysis was performed. The analysis was executed with the PHYSYS software pack-



Figs. 1-5. Terminology. 1. Male genitalia. 2. Aedeagus. 3. Male head. 4. Female genitalia. 5. Wing venation.



age written by M. Mickevich and J. S. Farris (1984). The characters were coded alphanumerically and read with the CREAD option. A description of each character and its hypothesized transformation series is discussed in the morphology section.

The DWAG.S command (with the tree buffer set to 10, the default) was used to perform a Wagner ground-plan analysis (Farris, 1970; Mickevich and Farris, 1984) that estimates relationships among taxa based on the Wagner parsimony criterion (Farris, 1983). The program uses both local and global branch-swapping. Branch-swapping searches for the most parsimonious tree by iteratively rearranging branches on an estimated tree and re-optimizing ancestral character states. Local branch-swapping rearranges terminal taxa and global branch-swapping rearranges subterminal groups. The DIAG.C command in PHYSYS calculated the consistency indices, a measure of homoplasy (Farris, 1969), for each character and tree.

#### MORPHOLOGY

The character numbers in the following discussion correspond to the character matrix in Table 1 and to the Summary of Characters and States.

**Head.** The eyes do not vary in shape or size. An ocellus, with an associated chaetosema, is always present. However, ocelli are absent in other taxa of the Pyralidae, such as the Galleriinae and occasionally the Phycitinae.

The antennae are sexually dimorphic. The antennal segments are simple in the female, but vary from laminate to serrate to bipectinate in the male. The length of the pectinations varies within genera. The antennal setae in the female always are shorter than the length of any one antennal segment. In the male, the setae vary in length along the antenna. The setae are longest near the base and on the ventral side and decrease in length toward the apex. The longest setae are usually two segments long and free, but in *Phidotricha* Ragonot they are longer than two segments and appressed to the ventral side of the antennal shaft (Fig. 43; Character 1). The pedicel is only slightly longer than the adjacent antennal segment. The scape of the female antenna is simple, not medially elongated at the base of the pedicel. The plesiomorphic condition in the male is a medial elongation of the scape that is longer than the base of the pedicel. This modification of the male scape is absent in ten genera (Fig. 31; Character 2). The length of the modification at the base of the scape and its possession of specialized setae varies within genera. The medial modification of the scape of *Milgitha* Schaus has secondary, fingerlike protrusions (Fig. 40; Character 3).

The frons is usually not sculptured, but *Mazdacis* Solis, new genus, has a lobe below the antenna extending medially to the base of the clypeus (Fig. 101; Character 4).

A proboscis is always present and fully developed, except in *Roeseliodes* Warren where it is reduced in length to about half the length of the fully developed proboscis found in the remaining Epipaschiinae (Character 5).

The pilifers vary in length within genera. A median clypeal lobe is present in all genera except *Roeseliodes* (Fig. 51; Character 6).

The labial palpus is always upturned, never porrect. The second segment of the labial palpus in the male varies in shape. Typically it is simple with no modifications (Fig. 31; Character 7), as in the female, but several modifications, interpreted as independent, occur. The genera *Quadraforma* Solis, new genus, *Mazdacis*, *Pococera* Zeller, *Tancoa* Schaus, and *Dasyvesica* Solis have a tubulate second segment of labial

Table 1. Character matrix for 22 genera of Epipaschinae with *Lacalma* and *Macalla* as outgroups used for cladogram generation (Fig. 136).

	10	20	30	40	50	60	65
<i>Lacalma</i>	0 0 0 0 0 2 0 0 3	0 0 0 0 0 1 0 0 1 0	1 1 0 0 0 0 0 0 1 0	0 0 0 0 0 ? 0 1 0	0 1 0 ? 0 0 0 0 1 1 0	0 0 0 0 0 0 ? 0 0 0	0 0 1 0 2
<i>Macalla</i>	0 0 0 0 0 4 0 0 3	0 0 1 0 1 1 1 0 0 0	0 1 1 0 0 0 0 0 0 0	0 0 0 0 0 ? 0 0 0	0 0 ? ? 0 0 0 0 0 1 0	1 1 ? ? 0 ? 0 1 0	0 0 1 1 1
<i>Roeseliodes</i>	0 0 0 0 1 1 0 0 0 0	0 0 0 0 0 1 1 0 0 0	1 0 1 0 0 1 1 0 1 0	0 0 1 1 0 ? 0 0 0	0 0 ? ? 0 0 0 0 0 0 0	0 0 0 ? 0 1 0 0 0	1 1 0 0 2
<i>Cecidipta</i>	0 0 0 0 0 1 0 0 0 0	0 0 0 0 0 1 0 0 0 0	1 1 1 0 0 0 0 1 2	2 0 1 0 0 ? 1 1 0	0 1 ? ? ? 0 0 0 0 1 0	0 0 0 ? 0 ? 0 0 0 0	0 1 0 0 2
<i>Chloropaschia</i>	0 1 0 0 0 0 0 0 1	0 0 0 0 0 1 0 0 0 0	1 1 0 0 0 0 1 1 0	0 0 1 0 1 0 0 0 0	1 1 0 ? ? 1 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 2	0 1 0 0 2
<i>Quadraforma</i>	0 1 0 0 0 2 0 0 3	0 0 0 0 0 1 0 0 0 0	1 1 1 0 0 0 0 1 0	1 0 1 0 1 0 0 0 0	0 1 1 ? 0 0 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 2	0 1 0 0 2
<i>Pandoflabella</i>	0 0 0 0 0 3 0 0 3	0 0 0 0 0 1 0 0 0 0	0 1 0 0 0 0 0 1 0	0 0 1 0 1 0 0 0 0	0 1 0 ? 0 0 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 1	0 1 0 0 2
<i>Mazdacia</i>	0 1 0 1 0 2 0 0 2	0 0 1 0 0 1 0 1 0 0	0 1 1 0 0 0 0 1 0	2 0 1 0 1 0 0 0 0	0 1 0 1 0 0 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 1	0 1 0 0 2
<i>Tallula</i>	0 1 0 0 0 0 0 0 0	0 0 0 0 0 1 0 0 0 1	0 0 0 0 0 1 0 0 0 1	0 0 1 0 1 1 1 0 0	0 0 ? ? ? 0 0 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 0	0 1 0 0 0
<i>Phidotricha</i>	1 1 0 0 0 0 1 0 0 0	0 0 0 0 0 1 0 0 0 0	0 0 0 0 0 0 0 1 0	1 0 1 0 1 1 1 0 0	0 0 ? ? ? 0 0 0 0 0 1 0	0 0 1 1 0 0 ? 0 0 0	0 1 0 0 2
<i>Tetralopha</i>	0 0 0 0 0 2 0 0 3	0 0 0 0 1 1 0 1 0 0	0 0 0 0 0 0 0 0 1 0	1 0 1 0 1 0 1 1 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 1 0 0 ? 0 0 0	0 1 0 0 2
<i>Milgitha</i>	0 0 1 0 0 0 0 0 3	0 0 1 0 0 1 0 0 0 0	0 1 0 0 0 0 0 1 0	0 0 1 0 1 0 0 0 0	0 1 0 ? 0 0 0 0 0 1 0	0 0 1 1 0 0 ? 0 0 0	0 1 0 0 2
<i>Carthara</i>	0 0 0 0 0 1 0 0 0	0 0 0 0 0 1 0 0 0 0	0 1 1 1 1 0 0 0 1	0 0 1 0 1 0 0 0 0	0 1 0 ? 0 0 0 0 0 1 0	0 0 1 0 0 1 ? 0 0 1	0 1 0 0 2
<i>Mediavia</i>	0 0 0 0 0 1 0 1 3	0 0 0 0 0 0 0 0 0	0 1 1 0 0 0 0 1 0	0 0 1 0 1 0 0 1 0	0 0 ? 1 1 0 0 0 0 1 0	0 0 1 0 0 1 ? 0 0 1	0 1 0 0 2
<i>Tancoa</i>	0 0 0 0 0 2 0 0 2	0 0 0 0 0 1 1 0 0 0	0 1 0 0 0 0 1 1 0	0 1 1 0 1 0 0 0 1	0 0 ? 0 ? 0 0 1 0 0 0	0 0 1 0 0 1 ? 0 0 0	0 1 0 0 2
<i>Onaida</i>	0 0 0 0 0 0 0 0 0	0 0 0 0 0 1 0 0 0 0	0 0 0 0 0 0 0 1 1	0 0 1 0 1 0 0 0 0	0 1 0 ? 0 0 0 0 0 1 0	0 0 1 0 0 3 ? 0 0 0	0 1 0 0 2
<i>Dasyvesica</i>	0 0 0 0 0 2 0 0 3	0 0 0 0 0 1 0 0 0 0	0 0 0 0 0 0 0 1 1	0 0 1 0 0 ? 0 0 0	0 1 0 ? ? 0 1 0 0 1 0	1 0 1 0 1 2 ? 0 0 0	0 1 0 0 2
<i>Deuterollyta</i>	0 0 0 0 0 1 0 1 3	0 0 1 0 0 1 0 0 0 0	1 1 0 0 0 0 0 1 0	0 0 1 0 1 0 0 0 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 0 0 1 ? 0 0 1	0 1 0 0 2
<i>Accinctapubes</i>	0 0 0 0 0 1 0 0 0	0 1 1 0 0 1 0 0 0 0	1 1 1 0 0 0 0 1 0	0 0 1 0 1 0 0 0 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 0 0 0 ? 1 0 0	0 1 0 0 2
<i>Bibasilaris</i>	0 0 0 0 0 0 0 0 0	0 0 1 0 0 1 0 0 0 0	0 1 0 0 0 0 0 1 0	0 0 1 0 1 0 0 1 0	0 1 0 ? ? 0 0 0 0 0 1 1	0 0 1 0 0 0 ? 0 0 1	0 1 0 0 2
<i>Anarnatula</i>	0 1 0 0 0 0 1 1 0 0	1 0 1 0 0 1 0 0 0 0	0 0 0 0 0 0 0 1 0	0 0 1 0 1 0 0 0 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 0 0 0 ? 0 0 0	0 1 0 0 2
<i>Cacozeila</i>	0 0 0 0 0 0 1 0 0 3	0 0 0 0 0 1 0 0 0 0	0 1 1 0 1 0 0 1 0	0 0 1 0 0 ? 0 0 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 1 0 1 ? 0 0 1	0 1 0 0 2
<i>Toripalpus</i>	0 0 0 0 0 0 0 0 3	0 0 1 0 0 1 0 0 0 0	0 1 0 0 0 0 0 1 0	0 0 1 0 0 ? 0 0 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 1 0 0 ? 0 0 0	0 1 0 0 0
<i>Pococera</i>	0 0 0 0 0 2 0 0 3	0 0 0 0 0 1 1 0 1 0	0 0 0 0 0 0 0 0 1	0 1 0 1 0 1 0 1 0	0 1 0 ? ? 0 0 0 0 0 1 0	0 0 1 1 0 0 ? 0 0 0	0 1 0 0 2

palpus (fig. 22 in Solis, 1991) that surrounds specialized setae of the maxillary palpus. The second segment in *Pandoflabella* Solis, new genus is flabellate, that is, it expands to a narrow fanlike shape when water is flushed through the segment (Fig. 76). In *Macalla* Walker the distal portion of the second segment is broadened and bears a circular patch of non-deciduous setae. The position of the organ of vom Rath varies within some genera. The third segment of the labial palpus varies in length within genera.

The maxillary palpi have three segments, although studies by Hulst (1889) had suggested four segments. Scanning electron photographs of the same species studied by Hulst were examined. The disagreement results from a medial collapse of the first segment. Four and five segments are found in the more primitive groups of Lepidoptera. The base of the first segment of the maxillary palpus is typically sclerotized, but in *Mediavia* Solis, new genus, and *Deuterollyta* Lederer it is membranous and pleated (Fig. 36; Character 9). The second segment bears a proximal lobe or extension in *Anarnatula* Dyar (Fig. 9; Character 11). The place of attachment of the third segment of the maxillary palpus on the second in the male varies among genera (Character 10). The third segment adjoins the apex of the second segment (Fig. 54), the typical lepidopteran condition, in *Roeseliodes*, *Cecidipta* Berg, *Tallula* Hulst, *Phidotricha*, *Carthara* Walker, *Oneida* Hulst, *Anarnatula*, *Accinctapubes* Solis, new genus, and *Bibasilaris* Solis, new genus. In *Chloropaschia* Hampson, the third segment adjoins the second segment slightly below its apex (Fig. 31), and in *Mazdacis* and *Tancoa* it arises from the midpoint of the second segment (Fig. 58). In the remaining genera, including the outgroups *Macalla* and *Lacalma* Janse, the third segment is attached at the base of the second segment (Fig. 64). The insertion of the third segment on the second is hypothesized to transform gradually from the apical to basal position. In *Anarnatula* the midpoint of the segment of the maxillary palpus is twice as wide as the base (Fig. 9; Character 8).

**Thorax.** The legs are simple with no variation in tarsal spines. The number of hind tibial spurs varies in number in some genera.

The epipaschiine wing-locking device provides several characters. The frenulum consists of one bristle in the male and two bristles in the female. The bristles are tapered in all genera except *Accinctapubes*, in which they are bulbous apically in the male (Fig. 89; Character 12). There are two structures in the forewing that function to hold the frenulum, a retinaculum and a frenulum hook, both of which occur in other Pyralidae. A retinaculum, a group of small, hooked setae at the base of the wing below the Cu vein, is always present in males and females of the Epipaschiinae. In addition the frenulum hook, an extension of the Sc vein originating at the base of the wing and extending to the discocellular cell (Fig. 35; Character 13), occurs in eight genera.

Color and pattern on the wing were not used for the phylogenetic analysis because of their variability (see Solis, 1991). Many Epipaschiinae have green-tinted wings in life, but this color fades to brown or dull-yellow after they are dry. Patterns vary within some genera. The forewing of most males in *Pococera*, except *gibella* Zeller and *tertiella* Dyar, has a costal fold with a specialized tuft of scales (Fig. 127; Character 14). This feature occurs sporadically in the Phycitinae and other families in the Lepidoptera.

Wing venation has been used widely in Lepidoptera taxonomy. Fusion of wing



veins is usually considered to be derived and a full complement of veins is considered to be plesiomorphic. In the epipaschiine forewing,  $R_1$  and  $R_2$  may be separate or completely fused (Character 15).  $R_2$  usually arises proximal to the discocellular cell (Character 16), but in *Mediavia Solis*, new genus it arises distal to the discocellular cell (Fig. 92). In *Macalla* and *Roeseliodes*  $R_3$  and  $R_4$  are fused (Fig. 50; Character 17).  $R_5$  and  $M_1$  are always present with  $M_1$  forming the anterior outer corner of the discocellular cell. In the plesiomorphic condition, the cell is more than half as long as the forewing, but in *Mazdacis* and *Pococera* it is less than half the length of the forewing (Fig. 69; Character 18).  $M_3$  and  $Cu_1$  are fused at the base in *Lacalma* (Fig. 113; Character 19). In most genera  $CuA_1$  and  $M_3$  are parallel to each other, but in *Tallula*  $CuA_1$  arches toward  $M_3$  (Fig. 55; Character 20). The  $CuP$  vein is primitively absent in the Epipaschiinae, but re-appears in *Lacalma*, *Roeseliodes*, *Cecidipta*, *Chloropaschia*, *Quadraforma*, *Deuterollyta*, and *Accinctapubes* (Fig. 35; Character 21).  $2A$  is coincident with  $1A$  in most epipaschiines, but  $3A$  is lost in several genera (Fig. 69; Character 22).

In the hindwing,  $Sc+R_1$  and  $R_s$  may be fused at one point or separate (Fig. 35; Character 23).  $Sc+R_1$  may be convexly curved, a synapomorphy of *Carthara* (Fig. 17; Character 24).  $R_s$  extends to less than half the length of the discocellular cell in most genera, but it extends farther in *Carthara*, *Tallula*, and *Cacozelia Grote* (Fig. 17; Character 25). For most epipaschiines  $M_2$  and  $M_3$  are separate, but fusion of  $M_2$  and  $M_3$  occurs in *Roeseliodes* (Fig. 50; Character 26). The amount of fusion at the base of  $M_2$  and  $M_3$  varies within the remaining genera.  $CuA_1$  and  $CuA_2$  are separate at the base. The loss of  $CuA_2$  is a synapomorphy for *Roeseliodes* (Fig. 50; Character 27).  $1A$ ,  $2A$ , and  $3A$  are present in the hindwing.

**Abdomen.** The first eight segments that form the abdomen are simple, without any distinguishing characteristics, except for the unique sclerotized pattern on segment eight of *Chloropaschia* (Fig. 28) and *Tancoa* (Fig. 53; Character 28). The epipaschiine tympanic organs occur on the first sternum and are described and well illustrated by Minet (1983, 1985). Secondary venulae are never present in the *Pococera* complex or the entire subfamily, the Epipaschiinae (Solis and Mitter, 1992). No morphological variation was detected at the generic or specific level in the *Pococera* complex.

**Male genitalia.** In the epipaschiines, the tegumen articulates ventrocephalad to the vinculum, valva, and gnathos and with the uncus dorsoposteriad. The tegumen is primarily membranous and abuts only a small portion of the base of the uncus. Anteriorly, the tegumen is sclerotized at points of articulation. A synapomorphy of the Epipaschiinae is a separate "sclerite" formed by the section of the tegumen that articulates with the gnathos, which is highly sclerotized and separated by membrane from the dorsal part of the tegumen (Character 29). The term "sclerite," as used here, is not a sclerite according to Torre-Bueno (1989), because it is not part of the body wall, but it is a section of the tegumen separated by membrane. This separate sclerite does not occur in the remaining subfamilies of Pylalidae. Its distribution in the Crambidae is uncertain since this structure is usually visible only on unmounted specimens, but representatives studied did not have the sclerite. The tegumen sclerite varies in shape and length. It does not usually reach a midventral position, but in *Oneida* and *Dasyvesica* it does reach a midventral position (fig. 9 in Solis, 1991), and in *Cecidipta* it extends beyond the midventral position (Fig. 22; Character 30). The tip of the tegumen sclerite is usually pointed, that is, less broad than the base,

but in *Quadraforma*, *Phidotricha*, and *Pococera* the tip is as broad as the base (Fig. 65), and the tip is broader than the base (Fig. 22) in *Mazdacis* and *Cecidipta* (Character 31). A synapomorphy for *Tancoa* is a dorso-anterior extension of the tegumen (Fig. 59; Character 32).

One of the apomorphies for the *Pococera* complex is the presence of a saccus that is elongate, bulbous and curved up toward the anterior end of the aedeagus (Fig. 91; Character 33). The entire vinculum curves up toward the base of the aedeagus in all other epipaschiines and some other pyralids, but it does not form an evagination or saccus.

The uncus is well developed, almost as long as the vinculum in epipaschiines and is reduced only in *Roeseliodes* (Fig. 48; Character 34). The uncus has arms that are elongate ventro-anteriorly and articulate with the base of the gnathos. In some genera, the uncus has a sclerotized structure at the base (Character 35). The basal sclerotization when present is U-shaped (Fig. 19), except that in *Tallula* and *Phidotricha* it is triangular (Fig. 36; Character 63). Caudally, the uncus usually has many setae, at times extending to the middle of the uncus, but in several genera, there is only a single, distal row of setae (Fig. 65; Character 37). The width of the uncus is usually uniform, but in several genera the caudal end is wider than the width at the midpoint (Fig. 65; Character 38). Only *Tancoa* has structures that could be termed *socii* (Klots, 1956), arising medially from the uncus (Fig. 59; Character 39).

In the epipaschiines, the base of the gnathos articulates posteriorly with the arms of the uncus and anteriorly with the tegumen. The arms of the gnathos are always fused at the apex, and most genera have a small curve just before the apical hook. The derived condition is the absence of this curve (Fig. 28; Character 40) and occurs in *Chloropaschia*.

The valvae are usually simple; however, most genera possess a median basal lobe (Fig. 87; Character 41) that is secondarily lost in *Roeseliodes*, *Tallula*, *Phidotricha*, *Mediavia*, and *Tancoa*. The lobe is usually a short, round nub, but in *Quadraforma* it is at least twice as long as the short condition, and square (Fig. 96; Character 42). A lobe adjacent to the costa occurs in *Mediavia* and *Mazdacis* (Fig. 91; Character 43). In *Mazdacis*, the lobe extends midventrally only to the end of the costa, but in *Mediavia* it extends beyond the costa and adjoins the juxta (Fig. 91; Character 44). In *Chloropaschia*, the valva is covered with non-deciduous rows of thin setae (Fig. 28; Character 45). *Dasyvesica* has a patch of deciduous, thick setae on the sacculus (fig. 19 in Solis, 1991; Character 46). *Tancoa* has a membranous extension, covered with setae, from the apex of the valva (Fig. 59; Character 47) that does not occur elsewhere in the epipaschiines. *Lacalma* has an expanded vinculum with coremata (Fig. 111; Character 48). This condition does not appear to be present in any other epipaschiine.

In most epipaschiines the anterior end of the aedeagus, the coecum, is usually elongate and curved (Fig. 13; Character 49). A synapomorphy for *Bibasilaris* is a bilobed coecum (Fig. 84; Character 50). But in *Roeseliodes* (Fig. 49) and *Tancoa* (Fig. 60) the anterior end is short, or the coecum is absent, and the ductus ejaculatorius is found at a terminal, anterior position on the aedeagus. In the *Pococera* complex *cornuti* occur only in *Dasyvesica* (fig. 19 in Solis, 1991; Character 51) although they do occur in other genera, such as *Macalla*, outside the *Pococera* complex.

A transtilla is not present in the Epipaschiinae. The juxta in the epipaschiines

consists typically of a base with arms extending laterally and caudad around the aedeagus, but in *Macalla* the juxta is almost completely bifurcate and its arms are ventrad and caudad of the aedeagus (Fig. 107; Character 52). In most genera the arms are longer than the base of the juxta, but in *Oneida* and *Dasyvesica* the arms are as long as the base of the juxta (fig. 9 in Solis, 1991; Character 53). *Lacalma*, *Roeseliodes*, and *Cecidipta* lack arms and the juxta is entire (Fig. 22). If arms are present, they can be shorter distally than the costa of the valva (fig. 9 in Solis, 1991), or extend beyond a point perpendicular to the base of the valva (Fig. 28; Character 54). The base of the juxta may be more heavily sclerotized than the arms (fig. 19 in Solis, 1991; Character 55) as in *Dasyvesica*. The juxta can have one medial lobe or two lateral lobes anterior to the aedeagus. The base of the juxta may have a lobe that is long and pointed, extending caudally (Fig. 65), as in *Phidotricha*, *Pococera*, *Milgitha*, *Accinctapubes*, *Bibasilaris*, *Anartula* and *Toripalpus*, or that is small and round (Fig. 28) as in the remaining genera, except *Dasyvesica* and *Oneida* which lack a medial lobe. In *Dasyvesica* the base of the juxta is flat (fig. 19 in Solis, 1991), but an apomorphy for *Oneida* is a slight curve caudally of the base of the juxta (fig. 9 in Solis, 1991; Character 56). If lateral lobes are present, the lobes have round apices (Fig. 22) in *Cecidipta* and pointed apices in *Roeseliodes* (Fig. 48; Character 59).

**Female genitalia.** The ovipositor lobes are membranous with many, usually unmodified setae. However, *Accinctapubes* bears unique setae on the ovipositor lobes that are spatulate and distally trifurcate (Fig. 85; Character 58).

The distal margin of the lamella antevaginalis is typically membranous, but in *Macalla* it is sclerotized (Fig. 105; Character 59). A ventral membranous fold associated with the lamella antevaginalis may occur in some genera, and it may be weakly or strongly bilobed (Figs. 26, 32; Character 60). The lamella postvaginalis is typically membranous in epipaschiines, but in *Roeseliodes* it is sclerotized (Fig. 47; Character 61).

In the Epipaschiinae, the ductus seminalis originates from the ductus bursae near the ostium bursae. In the *Pococera* complex the ductus bursae is always less than half as wide as the posterior edge of the seventh segment, in contrast to a ductus that is at least half as wide as the posterior end of the seventh segment in *Macalla* and *Lacalma* (Figs. 105, 110; Character 62). The ductus bursae has no constrictions before the corpus bursae in the *Pococera* complex, but it has a constriction in *Lacalma* and *Macalla* (Figs. 105, 110; Character 63).

The corpus bursae is membranous and comprised of only one sac in the *Pococera* complex, but *Macalla* shows a derived accessory bursa (Fig. 105; Character 64). Most genera in the *Pococera* complex and *Lacalma* have a signum composed of two, separated, elongate-conical, spinelike projections on the inner surface of the bursa (Fig. 68). These are lost in *Toripalpus* (Fig. 70) and *Tallula*. *Macalla* has a signum composed of two flat, scobinate patches (Fig. 105; Character 65).

#### SUMMARY OF CHARACTERS AND STATES

Final character transformation series follow order in which states are listed unless otherwise specified by a character state tree using notation according to PHYSYS (Mickey and Farris, 1984).

**Head.** 1. Longest male antennal setae: twice as long as antennal segments and not

appressed to ventral side (0); more than twice as long as two antennal segment lengths and appressed to ventral side (1).

2. Scape extension, length: longer than base of pedicel (0); not reaching base of pedicel (1).

3. Scape extension, secondary fingerlike protrusions: absent (0); present (1).

4. Frons, lobe below antenna: absent (0); extending medially to base of clypeus (1).

5. Proboscis: fully developed (0); less than half of fully developed in length (1).

6. Clypeus, median lobe: present (0); absent (1).

7. Second segment of labial palpus: simple, with no modifications (0); concave (1); tubulate (2); flabellate (3); apex with non-deciduous setae in a circular area (4). (4-0-1-2,3).

8. Third segment of maxillary palpus, shape: midpoint almost equal in width to base (0); midpoint twice as wide as base (1).

9. First segment of maxillary palpus, base: sclerotized (0); membranous, pleated (1).

10. Third segment of maxillary palpus situated: at apex of second segment (0); slightly below apex of second segment (1); at midpoint of second segment (2); at base of second segment (3).

11. Second maxillary segment proximal lobe: absent (0); present (1).

**Wing.** 12. Male frenulum, apex: tapered (0); bulbous (1).

13. Frenulum hook: absent (0); present (1).

14. Forewing costal fold: absent (0); present (1).

15. Forewing  $R_1$  and  $R_2$ : separate (0); fused (1).

16. Forewing  $R_2$ , origin of: distal to discocellular cell (0); proximal to discocellular cell (1).

17. Forewing  $R_3$  and  $R_4$ : separate (0); fused (1).

18. Discocellular cell, length: greater than half the length of the forewing (0); half forewing length or less (1).

19. Forewing  $M_3$  and  $CuA_1$ : separate at base (0);  $M_3$  and  $CuA_1$  fused at base (1).

20. Forewing  $CuA_1$ : parallel to  $M_3$  (0); arching toward  $M_3$  (1).

21. Forewing  $CuP$ : absent (0); present (1).

22. Forewing 3A: not coincident with 1A + 2A (0); coincident with 1A + 2A (1).

23. Hindwing  $Sc+R_1$  and  $Rs$ : fused (0); separate (1).

24. Hindwing  $Sc+R_1$ : straight (0); with convex curve (1).

25. Hindwing  $Rs$ , length: less than half length of discocellular cell (0); more than half length of discocellular cell (1).

26. Hindwing  $M_2$  and  $M_3$ : separate (0); fused (1).

27. Hindwing  $CuA_2$ : present (0); absent (1).

**Male genitalia.** 28. Eighth abdominal sternum, sclerotized pattern: absent (0); present (1).

29. Tegumen, region articulating with gnathos and valvae: entire (0); a separate sclerite (1).

30. Tegumen sclerite: not reaching midventral position (0); reaching a midventral position (1); extending beyond the midventral position (2). (0-1,2)

31. Tegumen sclerite, tip: narrower than base (0); as broad as base (1); broader than base (2). (0-1,2)

32. Tegumen, dorsocaudad extension: absent (0); present (1).
33. Saccus: absent (0); present (1).
34. Uncus: almost as long as vinculum (0); half as long as vinculum (1).
35. Base of uncus, sclerotized structure: absent (0); present (1).
36. Sclerotized structure at base of uncus, shape: U-shaped (0); triangular-shaped (1).
37. Uncus setae, placement: not in a row, extending to half the length of uncus (0); a single row on caudal end of uncus (1).
38. Uncus, width at caudal end: not wider than width at midpoint (0); wider than width at midpoint (1).
39. Socii: absent (0); present (1).
40. Curve before apical hook on gnathos: present (0); absent (1).
41. Base of valva, medial lobe: absent (0); present (1).
42. Base of valva, length of medial lobe: short, round nub (0); twice as long as short condition and squareshaped (1).
43. Costa of valva, adjacent lobe: absent (0); present (1).
44. Costa of valva, length of adjacent lobe: extending midventrally to end of costa of valva (0); extending midventrally to juxta (1).
45. Valvae, non-deciduous rows of setae: absent (0); present (1).
46. Sacculus of valva, patch of thick, deciduous setae: absent (0); present (1).
47. Apex of costa of valva, membranous extension: absent (0); present (1).
48. Expanded vinculum with coremata: absent (0); present (1).
49. Ductus ejaculatorius, at anterior end of aedeagus: terminal (0); subterminal (1).
50. Anterior end of aedeagus: simple (0); bilobed (1).
51. Cornuti: present (0); absent (1).
52. Base of juxta: not bifurcate (0); completely bifurcate (1).
53. Juxta: without arms and entire (0); with arms, longer than base of juxta (1); with arms as long as base of juxta (2).
54. Juxta arms: not extending to costa of valva (0); extending beyond costa of the valva (1).
55. Juxta, sclerotization of base: equal to arms (0); more heavily sclerotized than arms (1).
56. Base of juxta, medial lobe: present, long, pointed (0); present, small, round (1); absent, flat, without convex deformation (2); absent, with convex deformation (3).
57. Juxta lateral lobes, apex: round (0); pointed (1).
- Female genitalia.** 58. Ovipositor lobes, setae: all simple (0); some spatulate, then terminally trifurcate (1).
59. Lamella antevaginalis, distal margin: sclerotized (0); membranous (1).
60. Lamella antevaginalis, ventral fold: absent (0); equal in width along length or weakly bilobed (1); strongly bilobed (2).
61. Lamella postvaginalis: sclerotized (0); membranous (1).
62. Ductus bursae width near ostium: at least half as wide as posterior edge of seventh segment (0); less than half as wide as posterior edge of seventh segment (1).
63. Ductus bursae constriction, posterior to ductus seminalis, constriction: absent (0); present (1).
64. Accessory bursa: absent (0); present (1).

65. Signum: absent (0); flat, scobinate patches (1); spinelike, scobinate projections (2). (1-2-0).

KEY TO GENERA OF THE *POCOCERA* COMPLEX

1.	Frenulum hook present .....	2
-	Frenulum hook absent .....	8
2(1).	Scape extension in males not extending to base of pedicel .....	3
-	Scape extension in males extending beyond base of pedicel .....	4
3(2).	Postmedial line of forewing extending toward outer margin to $M_2$ and $M_3$ , then toward the base of wing to $CuA_2$ where it extends toward the posterior margin .....	<i>Mazdacis</i> Solis (p. 54)
-	Postmedial line of forewing curving to the base of $M_2$ and with white scales present extending from base to postmedial line of discal cell and between $M_1$ and $M_2$ .....	<i>Anarnatula</i> Dyar (p. 15)
4(2).	Medial line of forewing curving twice; a faint spot present on $1A + 2A$ near the margin of forewing .....	5
-	Medial line of forewing not curving or curving once, $1A + 2A$ without spot near the margin of forewing .....	6
5(4).	Postmedial line of forewing extending anterobasally from $R_5$ toward the costa with small patch of white scales toward the outer margin .....	<i>Milgithea</i> Schaus (p. 28)
-	Postmedial line of forewing extending anterodistally from $R_5$ toward the outer margin and toward the base behind $CuA_2$ , without small patch of white scales toward the outer margin .....	<i>Toripalpus</i> Grote (p. 43)
6(4).	Forewing without $CuP$ , $Sc+R_1$ and $Rs$ of hindwing separate .....	<i>Accinctapubes</i> Solis (p. 48)
-	Forewing with $CuP$ , $Sc+R_1$ and $Rs$ of hindwing fused .....	7
7(6).	Postmedial line of forewing extending toward outer margin at $M_1$ and curving toward the base to posterior margin .....	<i>Bibasilaris</i> Solis (p. 46)
-	Postmedial line of forewing anterad $R_5$ bent abruptly toward the base .....	<i>Deuterollyta</i> Lederer (p. 25)
8(1).	Scape extension in males not reaching base of pedicel .....	9
-	Scape extension in males longer than base of pedicel .....	12
9(8).	Second segment of labial palpus of male not modified, a simple cylinder .....	10
-	Second segment of labial palpus of male modified, either concave or tubular .....	11
10(8).	Reniform spot of forewing a small dark line; medial line curving basally below reniform spot; apical area beyond postmedial line not suffused with dark scales; area between the medial and postmedial line not white .....	<i>Chloropaschia</i> Hampson (p. 23)
-	Reniform spot of forewing absent; medial line not curving basally; apical area beyond postmedial line always suffused with dark scales, area between the medial and postmedial lines nearly all white .....	<i>Tallula</i> Hulst (p. 35)
11(9).	Postmedial line of forewing curving toward outer margin at $M_3$ ; medial line not bifurcating; reniform spot absent .....	<i>Phidotricha</i> Ragonot (p. 31)
-	Postmedial line of forewing not curving toward outer margin at $M_2$ ; medial line bifurcating just below the reniform spot; one line extending to posterior margin and the other to base of postmedial line; reniform spot a small dark line .....	<i>Quadraforma</i> Solis (p. 52)
12(8).	$CuP$ of forewing present .....	13
-	$CuP$ of forewing absent .....	14
13(12).	Forewing length 11 mm or less, basal color gray, without white apical area or	

- black spots on adterminal line ..... *Roeseiodes* Warren (p. 33)
- Forewing length 15 mm or more, basal color beige or white, apical area white and black spots on adterminal line ..... *Cecidipta* Berg (p. 21)
- 14(12). Sc+R<sub>1</sub> and Rs of hindwing fused at one point ..... 15
- Sc+R<sub>1</sub> and Rs of hindwing completely separate ..... 19
- 15(14). 3A of forewing separate from 1A + 2A ..... 16
- 3A of forewing coincident with 1A + 2A ..... 18
- 16(15). Second segment of labial palpus of male not modified ..... *Oneida* Hulst (p. 30)
- Second segment of labial palpus of male modified, tubular ..... 17
- 17(16). Postmedial line of forewing concave from M<sub>1</sub> to CuA<sub>1</sub> and then concave again to CuA<sub>2</sub> and posterior margin; postmedial line of hindwing absent ..... *Dasyvesica* Solis (p. 25)
- Postmedial line of forewing extending to outer margin from M<sub>2</sub>; postmedial line of hindwing faintly present ..... *Pococera* Zeller (p. 39)
- 18(15). A patch of darker scales beyond postmedial line anterad of M<sub>2</sub>; medial line bifurcating at CuA<sub>2</sub>; lines or spots of dark scales basal to medial line of forewing absent ..... *Pandoflabella* Solis (p. 43)
- Patch of darker scales beyond the postmedial line above M<sub>2</sub> absent; medial line not bifurcated; lines or spots of dark scales basal to medial line of forewing present ..... *Tancoa* Schaus (p. 37)
- 19(14). Rs of hindwing more than half the length of discocellular cell ..... 20
- Rs of hindwing less than half the length of discocellular cell . *Mediavia* Solis (p. 50)
- 20(19). Reniform spot of hindwing extending to costa, costa never white; Sc+R<sub>1</sub> of hindwing straight, not curving toward costa anterad of where M<sub>1</sub> splits off R ..... *Cacozelia* Grote (p. 17)
- Reniform spot of hindwing not extending to costa, costa white, Sc+R<sub>1</sub> of hindwing curving toward costa anterad of where M<sub>1</sub> splits off R ..... *Carthara* Walker (p. 19)

## TAXONOMIC SYNOPSIS

*Anarnatula* Dyar, 1918

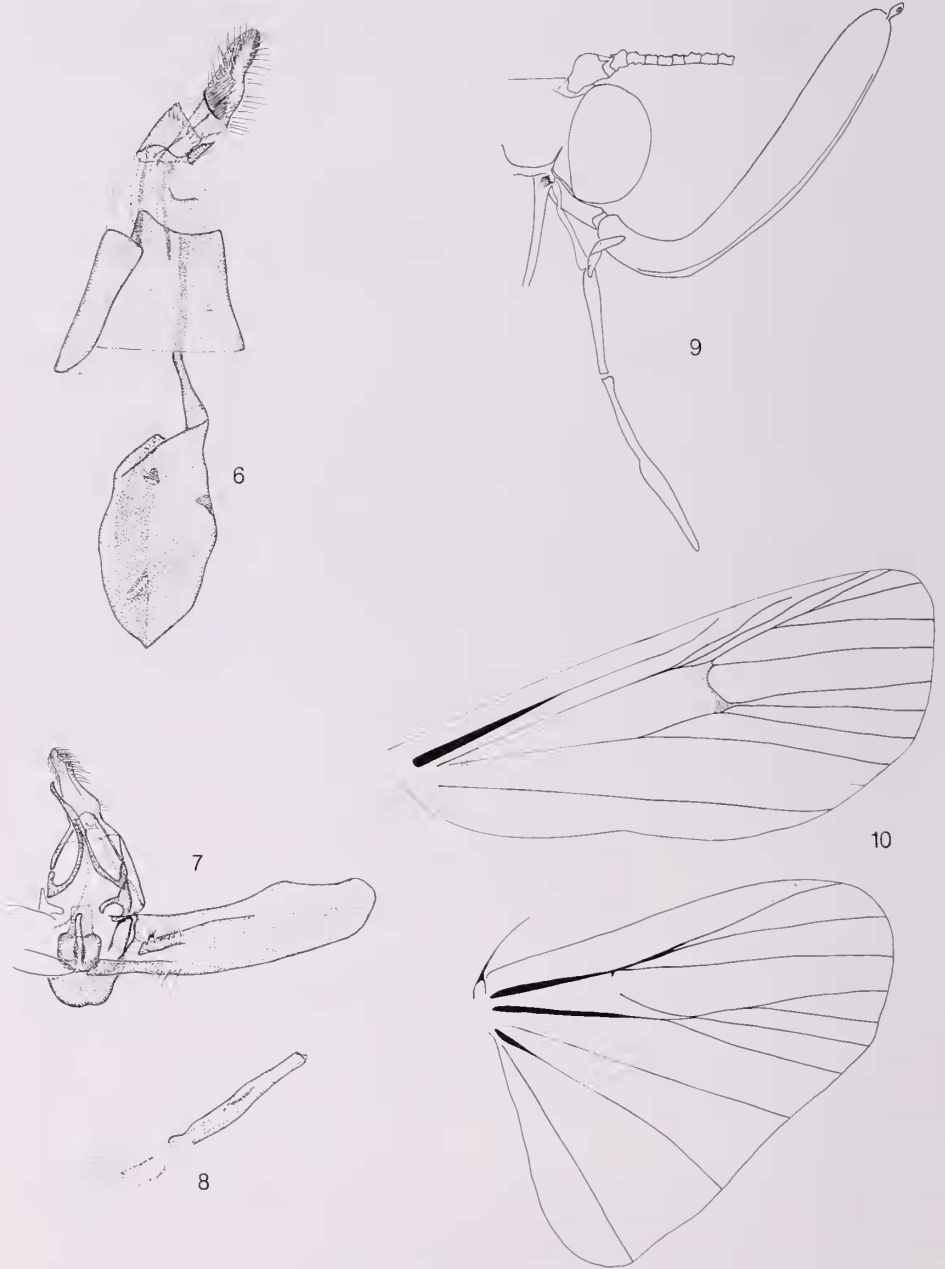
Figs. 6–10, 115

*Anarnatula* Dyar, 1918:371.

**Diagnosis.** *Anarnatula* is diagnosed by two autapomorphies on the male head (Fig. 9), a proximal lobe on the second segment of the maxillary palpus, and the third segment of the maxillary palpus with the midpoint twice as wide as the base. The presence of a frenulum hook (Fig. 10) also diagnoses this genus, but one also occurs in *Mazdacis*, *Deuterollyta*, *Bibasilaris*, *Accinctapubes*, *Milgithea*, *Toripalpus*, and the outgroup *Macalla*.

**Identification synopsis.** *Anarnatula* can be identified by the forewing pattern (Fig. 115) with a white postmedial line curving to the base of the wing at M<sub>2</sub> and white scales present from the base of the wing to the postmedial line in the discal cell and between M<sub>1</sub> and M<sub>2</sub>. The hindwing has orange scales.

*Anarnatula* is the sister group to the *Phidotricha-Tallula* clade. They share the lack of an elongated scape which is also lacking in other genera. Species in all three genera are small, approximately 7 mm in wing length, in comparison to other epipaschiinae. Externally this genus can be differentiated from all other genera by the orange scales



Figs. 6–10. *Arnatula* sp. 6. Female genitalia of *A. sylea* (Druce), #201 MAS. 7. Male genitalia of *A. sylea*, #200 MAS. 8. Aedeagus of *A. sylea*, #200 MAS. 9. Male head of *A. subflavida* Dyar, #575 MAS. 10. Wings of *A. sylea*, #200 MAS.



on the hindwing. *Phidotricha* and *Tallula* are gray, brown, or white. Also a frenulum hook in the males is present in *Anarnatula*, but absent in *Phidotricha* and *Tallula*.

**Type species.** *Anarnatula hyporhoda* Dyar, 1918, *ibid.* 54:371, by original designation; but considered by Holland and Schaus (1925) to be a junior synonym of *Pycnulia* Druce, 1899, *Biol. Centr.-Amer., Lepid. Heter.* 2:564. Type locality. Tabasco, Mexico (*hyporhoda*) (USNM); Veracruz, Mexico (*sylea*) (BMNH).

**Species examined.** *subflavida* Dyar, *sylea* (Druce).

**Distribution.** Southern Mexico to Belem, Brazil, and the Caribbean islands of Tobago and Dominica.

**Biology.** No information available.

**Remarks.** The species included in *Anarnatula* were not changed by this study. The two species in the genus (see Nomenclatural Summary) can be distinguished by the shape of the valva in the male, size of the signa, and wing color and pattern.

*Cacozelia* Grote, 1877

Figs. 11–15, 116

*Cacozelia* Grote, 1877:263–264.

**Diagnosis.** *Cacozelia* is diagnosed by a unique combination of two homoplasies. 1) The Rs of the hindwing (Fig. 15) is more than half the length of the discocellular cell, which also occurs in *Carthara* and *Tallula*. 2) In the male genitalia (Fig. 12) a sclerotized structure at the base of the uncus is lacking and is a parallelism in *Roeseliodes*, *Cecidipta*, *Oneida*, *Dasyvesica*, and *Toripalpus*. The sclerotized structure is also lacking in the outgroups, *Macalla* and *Lacalma*.

**Identification synopsis.** *Cacozelia* can be identified by a reniform spot extended to the costa on the forewing (Fig. 116).

*Cacozelia* can be confused externally with *Toripalpus*. The species are about the same size, but *Toripalpus* lacks the extended reniform spot. Although *Toripalpus* and *Cacozelia* share a homoplasious character, the lack of the sclerotized structure at the base of the uncus, there are various other differences. *Cacozelia* lacks a frenulum hook, but *Toripalpus* has a frenulum hook. *Cacozelia* has Sc+R<sub>1</sub> and Rs of the hindwing completely separate, but these veins are fused at one point in *Toripalpus*. The Rs of the hindwing in *Cacozelia* is more than half the length of the discocellular cell, but is less than half the length in *Toripalpus*. The base of the juxta is present in both genera, but is small and round in *Cacozelia* and long and pointed in *Toripalpus*. In the female, *Toripalpus* lacks the ventral fold in the lamella antevaginalis, but in *Cacozelia* the ventral fold is present and equal in width or weakly bilobed. *Cacozelia* has a signum that is spinelike and scobinate, but in *Toripalpus* the signum is absent.

**Type species.** *Cacozelia basiochrealis* Grote, 1877, *ibid.* 19 (I):264, by monotypy. Type locality. Texas, USA (BMNH).

**Species examined.** *albomedialis* (Barnes & Benjamin), *basiochrealis* Grote, *elegans* (Schaus), *interruptella* (Ragonot).

**Distribution.** *Cacozelia basiochrealis* has been collected as far north as Kansas (USA) and *elegans* as far south as Argentina. All four species occur in southern Texas, Arizona, New Mexico and southern California.

**Biology.** One specimen of *elegans* from Veracruz, Mexico reared on *Mimosa pigra berlandieri* (A. Gray) (Fabaceae) is located at the USNM.



Figs. 11–15. *Cacozelia basiochrealis* Grote. 11. Female genitalia #146 MAS. 12. Male genitalia #588 MAS. 13. Aedeagus #588 MAS. 14. Male head #588 MAS. 15. Wings #588 MAS.

**Remarks.** *Cacozelia* was placed in synonymy with *Stericta* by Hampson (1896), but Janse (1931) could not understand Hampson's reason, and instead placed *Cacozelia* under *Jocara*. Janse also stated that he did not have access to the type species of *Jocara* and used *trabalis* Grote since it appeared to be similar. Originally, and in this work, *trabalis* was placed in *Toripalpus*. After re-definition of this genus additional species were included from a variety of other genera.

*Cacozelia* has four described species (see Nomenclatural Summary) distinguished by scale color and pattern. Males of the species differ in the shape of the extension of the scape, the length and shape of the third segment of the labial palpus, and the second and third segments of the maxillary palpus.

*Carthara* Walker, 1865

Figs. 16–20, 117

*Carthara* Walker, 1865:914.

*Leptosphetta* Butler, 1878:67. **NEW SYNONYMY.**

*Pycnulia* Zeller, 1881:186. **NEW SYNONYMY.**

**Diagnosis.** *Carthara* is diagnosed by an autapomorphy, Sc+R<sub>1</sub> of the hindwing curves toward the costa prior to the point where M<sub>1</sub> splits off R (Fig. 17), and a homoplasious character, Rs of the hindwing is more than half the length of the disco-cellular cell, which also occurs in *Cacozelia* and *Tallula*.

**Identification synopsis.** *Carthara* can be identified (Fig. 117) by the white costa of the forewing, and the postmedial line curving to the outer margin above Cu<sub>2</sub> and below Cu<sub>2</sub> curving toward the base of the wing.

Externally, *Carthara* can be distinguished from other genera by the prominent white costa of the forewing. *Carthara* is most similar to *Bibasilaris*. See *Bibasilaris* for a comparison of the two genera.

**Type species.** *Carthara albicosta* Walker, 1865, *ibid.* 33:915, by monotypy. Type locality. Amazon region (UMO). *Leptosphetta* Butler, 1878, *Trans. Ent. Soc. Lond.*: 67. Type species: *L. rabdina* Butler, by original designation. *Pycnulia* Zeller, 1881, *Horae. Soc. Ent. Ross.* 16:186. Type species: *Idia scopipes* Felder & Rogenhofer, 1875, *Reise ost. Fregate Novara (Zool.)* 2 (Abt. 2): pl. 136, fig. 39, by subsequent designation by Shibuya, 1928, *J. Fac. Agric. Kok. Imp. Univ.* 22:104.

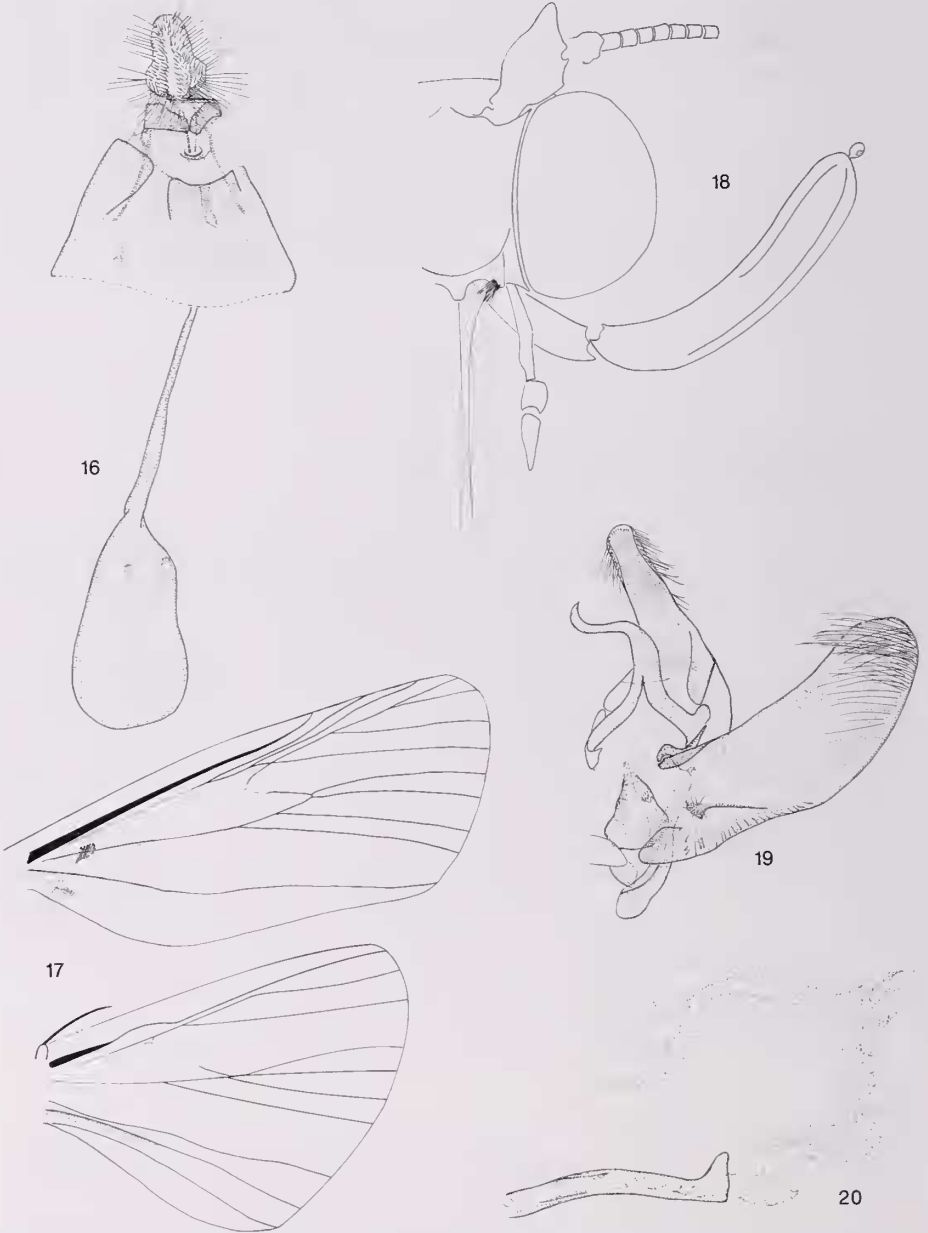
**Species examined.** *abrupta* (Zeller), *albicosta* (Walker).

**Distribution.** Southern Mexico to Brazil, with one species, *abrupta*, known from Cuba.

**Biology.** No information available.

**Remarks.** Although Hampson (1896) and Janse (1931) overlooked *Carthara albicosta* Walker, *Carthara* is the senior synonym. Hampson placed *Leptosphetta* and *Pycnulia* in *Stericta*. Hampson synonymized *ministra* and *rabdina* under *scopipes*. Janse (1931) placed *albicosta* and *scopipes* in *Leptosphetta* and outlined reasons for removing the two species from *Stericta*. He found the species to be distinct from *Stericta divitalis* (Guenée), the type species of *Stericta*, and provided a description for *Leptosphetta*. Janse pointed out that *Leptosphetta* Butler was originally placed in the Notodontidae and stated that he believed the genus to be confined to America.

*Carthara* is composed of two species (see Nomenclatural Summary) distinguished



Figs. 16–20. *Carthara albicosta* Walker. 16. Female genitalia #866 MAS. 17. Wings #175 MAS. 18. Male head #870 MAS. 19. Male genitalia #175 MAS. 20. Acdeagus #175 MAS.

by differences in forewing pattern and color, by the length of the scape extension in the male, and the morphology of the signa in the female.

*Cecidipta* Berg, 1877  
Figs. 21–25, 118

*Cecidipta* Berg, 1877:236–238.

*Acecidipta* Amsel, 1956:60. **NEW SYNONYMY.**

**Diagnosis.** *Cecidipta* is diagnosed by an autapomorphy, a tegumen sclerite (Fig. 22) that is extended beyond the midventral line. It is also distinguished by a unique combination of the following three homoplasies: the tip of the tegumen sclerite as broad as the base, which also occurs in *Mazdacis*; an uncus with the caudal end wider than the midpoint, also occurring in *Pococera*, *Mediavia*, *Bibasilaris*, and *Lacalma*; and a single row of setae on the caudal end of the uncus, as in *Tallula*, *Phidotricha*, and *Pococera*.

**Identification synopsis.** The adults of *Cecidipta* are the largest in the Epipaschiinae, some females reaching 5 cm in wingspan. Average forewing length is 1.5 cm in males and 2.0 cm in females. The genus can be identified by the forewing pattern (Fig. 118) with a white apical area beyond the postmedial line, the reniform spot a thin black line from R to CuA<sub>1</sub>, and large black spots on the adterminal line.

*Cecidipta* is most similar to its sister group *Roeseliodes*, but specimens of *Cecidipta* are larger than those of *Roeseliodes*. Forewings of *Roeseliodes* are usually 11 mm or less in length, and the basal color is gray. *Cecidipta* wing length is usually around 15 mm and the basal color is beige or white. The forewing of *Roeseliodes* lacks a white apical area, a reniform spot in most species, and large, black spots on the adterminal line, all of which are present in *Cecidipta*. In *Roeseliodes* the tip of the tegumen sclerite is narrower than the base, but as broad in *Cecidipta*. *Cecidipta* has an uncus that is wider at the caudal end than at the midpoint and a single row of setae on the caudal end. The caudal end of the uncus of *Roeseliodes* is less or as wide as the midpoint and lacks a single row of setae on the caudal end.

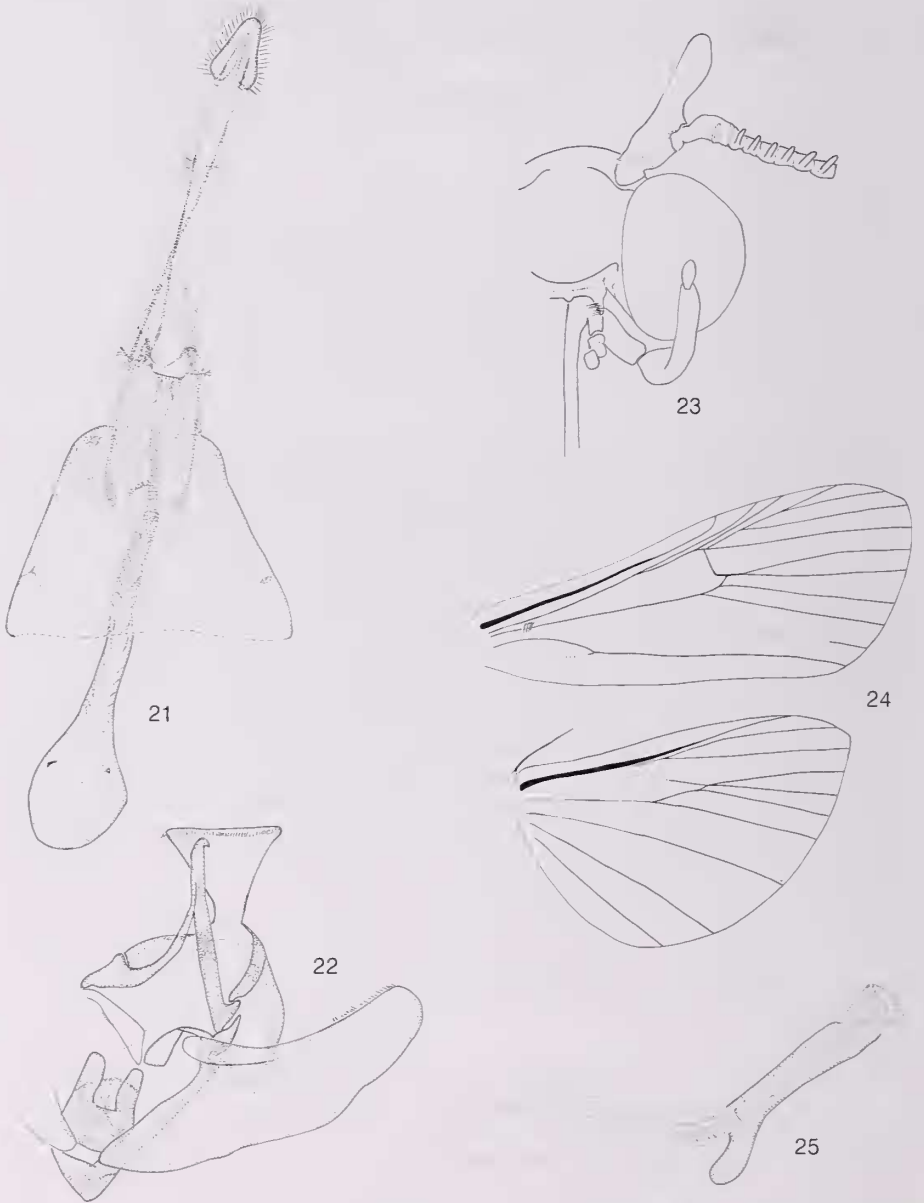
**Type species.** *Cecidipta excoecariae* Berg, 1877, *ibid.* 39:232–234, by monotypy. Type locality. Argentina (Buenos Aires). *Acecidipta* Amsel, 1956, *Bol. Ent. Venez.* 10:60. Type species: *A. major* Amsel, by original designation.

**Species examined.** *cecidiptoides* (Schaus), *excoecariae* Berg, *teffealis* (Schaus).

**Distribution.** Southwestern Mexico to Argentina, with one Caribbean record from Trinidad.

**Biology.** Berg (1877) and Bourquin (1945) described and illustrated the biology of *excoecariae* in Argentina. Berg reported that the eggs were laid in dipteran-induced galls and Bourquin reported that they were laid in cracks of the stems. According to Bourquin, the larva feeds on the foliage, but lives, eats and then pupates within stems of *Sapium haemospermum* Mueller (Euphorbiaceae). But Berg pointed out that while this method of concealment was the most common, the larva also constructs silk tubes from the galls or seeks out tubes of spiders or pupal cases of other larvae, and if these methods fail, it will web leaves together. Two specimens of *Cecidipta* sp. from Guyana reared on *Ficus* sp. ("Golden Fleece") (Moraceae) are in the USNM.

**Remarks.** *Cecidipta* has always been considered as distinct, but Janse (1931) discussed the inaccuracies associated with Hampson's (1896) description, particularly



Figs. 21–25. *Cecidiipta excoecariae* Berg. 21. Female genitalia #634 MAS. 22. Male genitalia #635 MAS. 23. Male head #635 MAS. 24. Wings #635 MAS. 25. Aedeagus #635 MAS.

in relation to the wing venation, and attributed it to the fact that Hampson did not denude the wings. Janse provided an in-depth description of *Cecidipta*. I synonymized *Accedipta* based on a photograph of the adult and genitalia by Amsel. More species were included from a variety of other genera.

*Cecidipta* has four described species (see Nomenclatural Summary). They are distinguished in the male genitalia by the width of the uncus at the apex and base, and the length of the midventral extension from the tegumen sclerite. Males also differ in the shape of the extension from the scape and the length of pectinations on the antennomeres. In females, species differences may be found in the length and width of the ductus bursae and corpus bursae, and in the dimensions of the signa.

*Chloropaschia* Hampson, 1906

Figs. 26–31, 119

*Chloropaschia* Hampson, 1906:141.

**Diagnosis.** *Chloropaschia* is diagnosed by two autapomorphies in the male genitalia, a valva expanded posteriorly with non-deciduous hairlike setae and a gnathos without a curve before the apical hook (Fig. 28). It is also distinguished by a combination of homoplasious characters of the head, wings and male genitalia. On the abdomen, the eighth sternum has a sclerotized pattern (Fig. 30), as in *Tancoa*. The male head (Fig. 31) has a simple second segment of the labial palpus, with no modifications, a condition which also occurs in *Bibasilaris*, *Oneida*, *Tallula*, *Roeseliodes*, *Cecidipta*, *Deuterollyta*, *Accinctapubes*, *Anarnatula*, *Cacozelia*, and *Tori-palpus*. The third segment of the maxillary palpus arises at the apex of the second segment, and this condition also occurs in *Roeseliodes*, *Cecidipta*, *Tallula*, *Phidotricha*, *Carthara*, *Oneida*, *Accinctapubes*, *Bibasilaris*, and *Anarnatula*. Sc+R<sub>1</sub> and R<sub>s</sub> of the hindwing are fused (Fig. 27), as in *Pandoflabella*, *Tallula*, *Phidotricha*, *Pococera*, *Milgithea*, *Tancoa*, *Oneida*, *Dasyvesica*, *Deuterollyta*, *Bibasilaris*, *Anarnatula*, *Tori-palpus*, and *Lacalma*.

**Identification synopsis.** *Chloropaschia* can be identified by a forewing pattern (Fig. 119) with the reniform spot reduced to a small dark line and the medial line curved basally posterior to the reniform spot. *Chloropaschia* is most similar to its sister group, *Quadraforma*, but can also be confused with species of *Pandoflabella*. See *Quadraforma* for a comparison of the two genera.

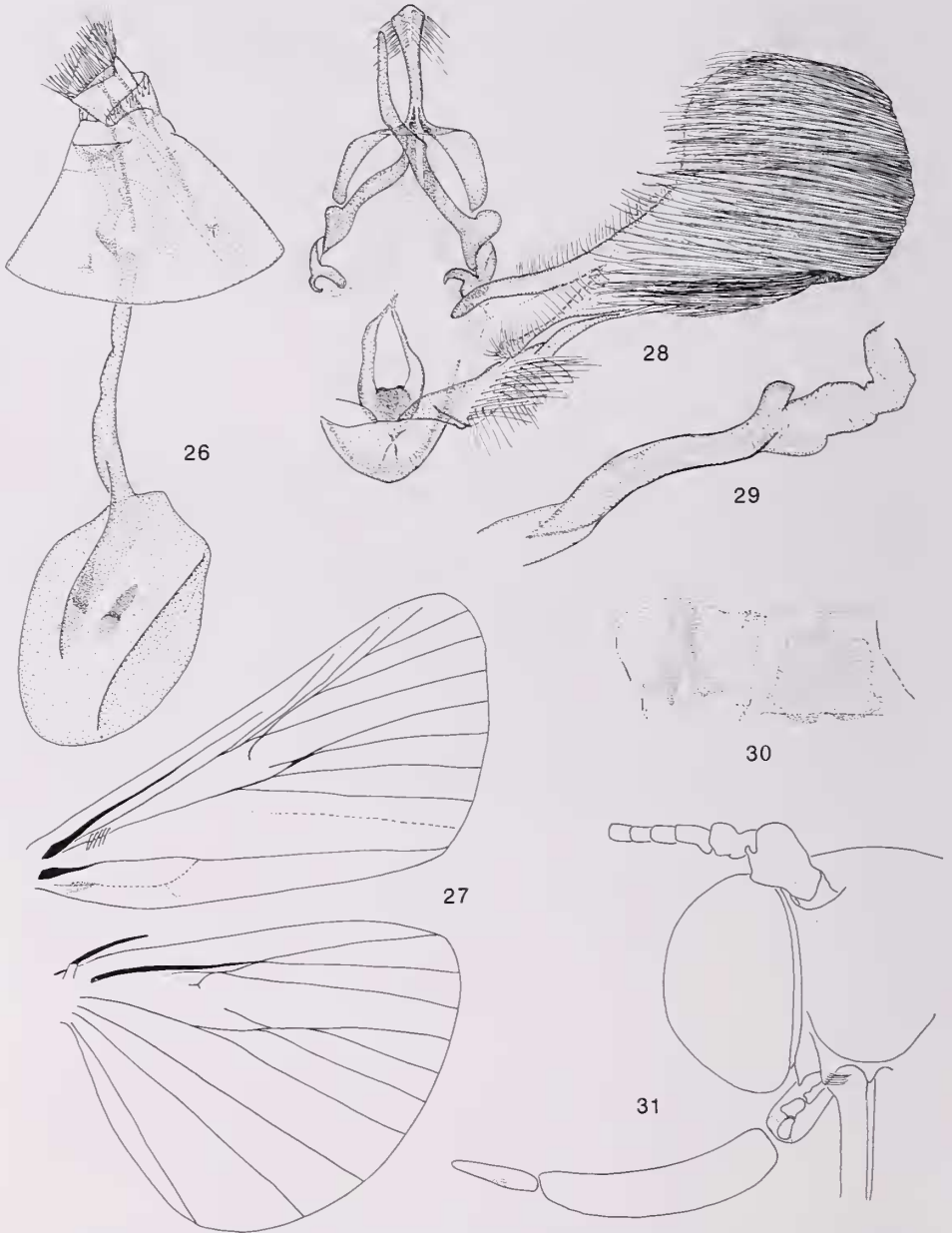
**Type species.** *Chloropaschia thermalis* Hampson, 1906, *ibid.* 17:141, by monotypy. Type locality. French Guiana (BMNH).

**Species examined.** *afflicta* (Schaus), *brithvaldia* Schaus, *contortilinealis* (Dognin), *epipodia* Schaus, *fabianalis* (Schaus), *fiachnalis* Schaus, *granitalis* (Felder & Rogenhofner), *hemileuca* Dognin, *mennusalis* Schaus, *pegalis* (Schaus), *possidia* (Schaus), *rufibasis* (Druce), *selecta* (Schaus), *thermalis* Hampson, *venantia* Schaus.

**Distribution.** Guatemala to northern Peru and the Amazon in Brazil.

**Biology.** No information available.

**Remarks.** Janse (1931) provided a description of *Chloropaschia* based on the type species and considered it to be a good genus. Species from a variety of other genera were included in *Chloropaschia* after the present re-definition and it now has 23 species (see Nomenclatural Summary). Species are distinguished by wing color and



Figs. 26–31. *Chloropaschia thermalis* Hampson. 26. Female genitalia #211 MAS. 27. Wings #820 MAS. 28. Male genitalia #820 MAS. 29. Aedeagus #820 MAS. 30. Eighth abdominal tergum and sternum #820 MAS. 31. Male head #820 MAS.



pattern, by the shape of the uncus and the lobe at the base of the valva, which varies in shape and length, and by the pattern of sclerotization of the eighth abdominal sternum.

*Dasyvesica* Solis, 1991

Fig. 135

*Dasyvesica* Solis, 1991:821–825.

**Diagnosis.** *Dasyvesica* is diagnosed by two autapomorphies in the male genitalia (fig. 19 in Solis, 1991), a patch of thick, deciduous setae on the sacculus, and the base of the juxta more heavily sclerotized than the arms. Other homoplasious synapomorphies are a tubular second segment of the labial palpus, as in *Mazdacis*, *Quadraforma*, *Cacozelia*, *Tancoa*, *Pococera*, *Milgithea* and *Lacalma*, a third segment of the maxillary palpus arising from the base of the second segment, as in *Quadraforma*, *Pandoflabella*, *Pococera*, *Milgithea*, *Mediavia*, *Cacozelia*, *Toripalpus*, *Lacalma* and *Macalla*, and cornuti present, as in the outgroup *Macalla*.

**Identification synopsis.** *Dasyvesica* can be identified by a forewing pattern (Fig. 135) with the postmedial line concave from  $M_1$  to  $CuA_1$ , and then concave again to  $CuA_2$  and the posterior margin of the wing. The reniform spot has darker scales distally. The median line is present from  $M_2$  to  $1A + 2A$ .

The sister group of *Dasyvesica* is *Oneida*. See *Oneida* for a comparison of the two genera.

**Type species.** *Pococera nepomuca* Schaus, 1925, Ann. Carn. Mus. 16:16. Type locality. Santa Cruz de la Sierra, Bolivia (CNP).

**Species examined.** *nepomuca* (Schaus), *lophotalis* (Hampson), *crinitalis* (Schaus).

**Distribution.** Venezuela and Bolivia to Quintana Roo in Mexico and to Jamaica in the Caribbean.

**Biology.** No information available.

**Remarks.** The three species in *Dasyvesica* were previously placed in *Jocara* and *Pococera*.

*Dasyvesica* was recently described (Solis, 1991) with three included species (see Nomenclatural Summary), and specimens of least two new species from South America are in the USNM. Species are distinguished by wing color and pattern, the area in the sacculus that is covered by setae, and the length of the extension of the scape.

**Etymology.** This generic name is derived from the Greek *dasys* meaning "thick with hair" and the Latin *vesica* (feminine) meaning "bladder" in reference to the cornuti on the vesica.

*Deuterollyta* Lederer, 1863

Figs. 32–36, 120

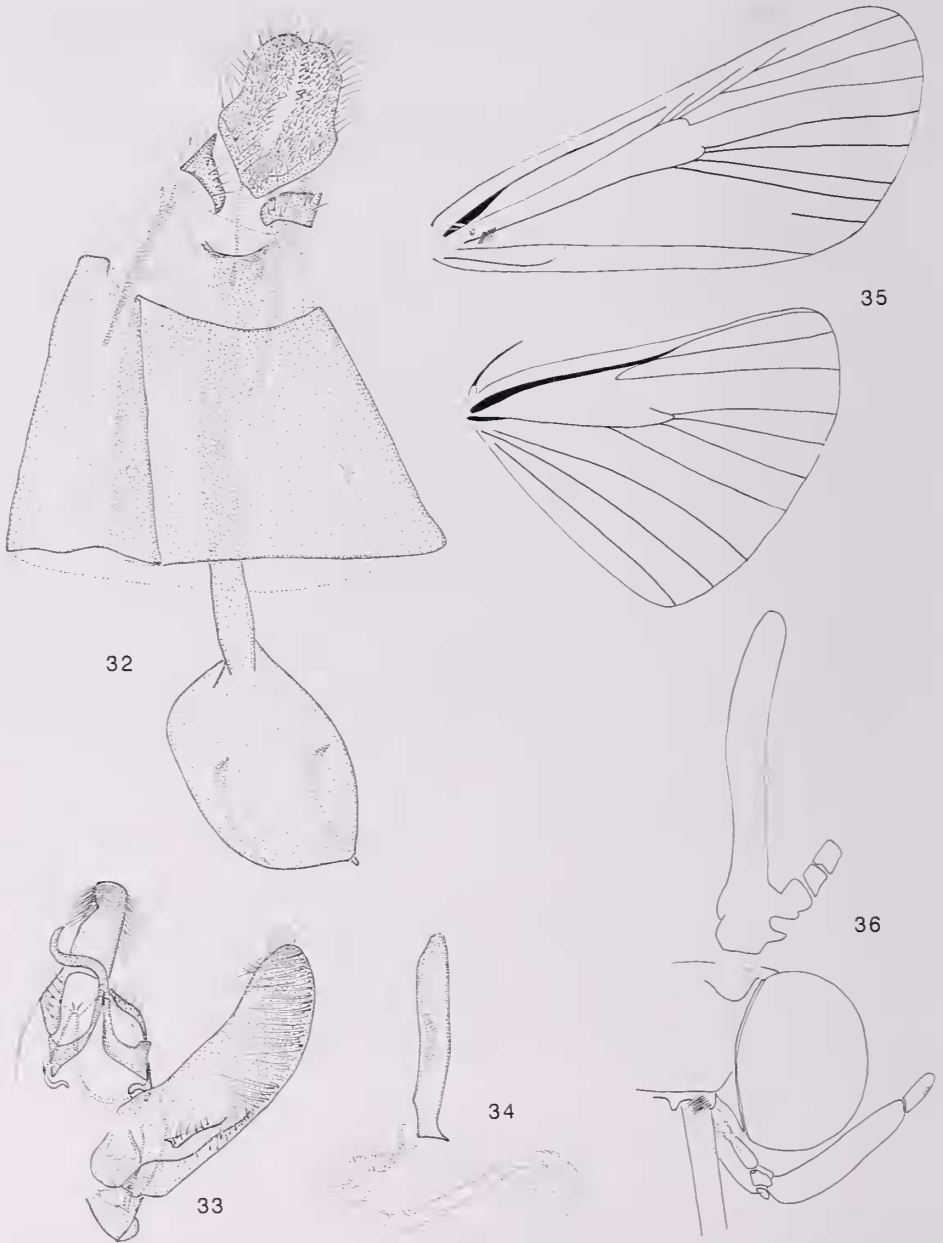
*Deuterollyta* Lederer, 1863:358–359.

*Winona* Hulst, 1888:113. NEW SYNONYMY.

*Oedomia* Dognin, 1906:120. NEW SYNONYMY.

*Ajocara* Schaus, 1925:15. NEW SYNONYMY.

*Ajacania* Schaus, 1925:14. NEW SYNONYMY.



Figs. 32–36. *Deuterollyta conspicualis* Lederer. 32. Female genitalia #889 MAS. 33. Male genitalia #888 MAS. 34. Aedeagus #888 MAS. 35. Wings #389 MAS. 36. Male head #389 MAS.

**Diagnosis.** *Deuterollyta* is diagnosed by a unique combination of three homoplasious wing characters; CuP present in the forewing, also occurring in *Roeseliodes*, *Cecidipta*, *Chloropaschia*, *Quadraforma*, *Bibasilaris*, and *Lacalma*; frenulum hook present, as in *Mazdacis*, *Milgitha*, *Accinctapubes*, *Bibasilaris*, *Toripalpus* and *Maccalla*; and Sc+R<sub>1</sub> and R<sub>2</sub> in the hindwing fused, as in *Chloropaschia*, *Pandoflabella*, *Tallula*, *Phidotricha*, *Pococera*, *Milgitha*, *Tancoa*, *Oneida*, *Dasyvesica*, *Bibasilaris*, *Anarnatula*, *Toripalpus* and *Lacalma*.

**Identification synopsis.** *Deuterollyta* can be identified by a forewing pattern (Fig. 120) with the postmedial line above R<sub>2</sub> shifting abruptly toward the base of the wing. *Deuterollyta* is most closely related to *Mediavia*. See *Mediavia* for a comparison of the two genera.

**Type species.** *Deuterollyta conspicualis* Lederer, 1863, *ibid.* 7 (10):359, Taf. 7, Figs. 16, 17. Lectotype designated Munroe (1958), p. 510. Type locality. Brazil (BMNH). *Winona* Hulst, 1888, *Ent. Am.* 4:113. Type species: *Toripalpus incrustalis* Hulst by original designation. *Oedomia* Dognin, 1906, *ibid.* 50:120. Type species: *O. hispida* Dognin by original designation. *Ajocara* Schaus, 1925, *ibid.* 16:15. Type species: *A. amazona* Schaus by original designation. *Ajacania* Schaus, 1925, *ibid.* 16:14. Type species: *A. steinbachalis* Schaus by original designation.

**Species examined.** *abachuma* (Schaus), *aidana* (Schaus), *albiferalis* (Hampson), *albimedialis* (Hampson), *amazonalis* (Schaus), *anastasia* (Schaus), *ansberti* (Schaus), *basilata* (Schaus), *cantianilla* (Schaus), *chlorisalis* (Schaus), *claudalis* (Moeschler), *cononalis* (Schaus), *conrana* (Schaus), *conspicualis* Lederer, *crystalis* Felder & Rogenhöfer, *dapha* (Druce), *francesca* Jones, *fuscifusalis* (Hampson), *hispida* (Dognin), *majuscula* Herrich-Schaeffer, *maroa* (Schaus), *multicolor* (Dognin), *nigripuncta* (Schaus), *oediperalis* (Hampson), *prudentia* (Schaus), *pyropicta* (Schaus), *ragonoti* Moeschler, *raymonda* (Schaus), *subcurvalis* (Schaus), *subfusca* (Schaus), *suiferens* (Dyar), *tenebrosa* (Schaus), *translinea* (Schaus), *umbrosalis* (Schaus), *yva* (Schaus), *zetila* (Druce).

**Distribution.** Florida and Mexico to Brazil and Argentina.

**Biology.** Specimens with the following host-plant data are in the USNM: *aidana* from Cuba on *Picrannia pentandra* Sw. (Simaroubaceae); *chlorisalis* on avocado (Lauraceae) from Costa Rica; *majuscula* on avocado from Honduras and Florida; *zetila* on avocado from Peru; *subcurvalis* on avocado from Honduras, Costa Rica and Venezuela. Upon describing *perseella*, Barnes and McDunnough also noted that one specimen was reared from *Persea americana* Mill. (cited as *P. gratissima* by the authors)(Lauraceae). Martorell (1976) listed the following leafwebbers from Puerto Rico on representatives of Lauraceae: *majuscula*, collected at Cayey, 1,800 ft on *Nectandra sintensii* Mez (Lauraceae); at Cayey and Arecibo on *Ocotea leucoxylo* (Sw.) Gómez Maza (Lauraceae); and at Cayey, 1,500 ft on *Phoebe elongata* (Vahl) Nees (Lauraceae); and *ragonoti* at El Pastillo and Mona Island on *Conocarpus erectus* L. (Combretaceae).

**Remarks.** Hampson (1896) treated *Deuterollyta* as a junior synonym under *Stericta*, but Janse (1931) disagreed with Hampson's placement based on wing venation and placed it in *Jocara*. Janse did not know whether *Deuterollyta* was "worth preserving" as he could not find any differences between it and *Jocara trabalis* Grote. Holland and Schaus (1925) treated *Deuterollyta* as a junior synonym of *Jocara*. I have resurrected *Deuterollyta* based on the synapomorphies listed in the diagnosis. Therefore,

many species described in *Jocara* are now placed in this genus. The true identity of *Jocara* is not known. The type species, *Jocara fragilis* Walker, was described from one female from the Dominican Republic. Only one other specimen, another female, from Haiti was located.

*Deuterollyta* has 36 species (see Nomenclatural Summary). I suspect that some will prove to be species complexes. Species are distinguished by scale color and pattern. They are also recognized by modifications of the extension of the scape, the uncus and by the dimensions of the signa.

*Milgithea* Schaus, 1922

Figs. 37–41, 121

*Milgithea* Schaus, 1922:208.

**Diagnosis.** *Milgithea* is diagnosed by one autapomorphy, the secondary fingerlike protusions on the scape extension (Fig. 40).

**Identification synopsis.** *Milgithea* can be identified by a forewing pattern (Fig. 121) having a prominent reniform spot sometimes extending toward the costa, a postmedial line extending from  $R_5$  basally with a small patch of white scales toward the outer margin, and a medial line twice curved. The hindwing has a spot on 1A near the margin.

*Milgithea* and *Toripalpus* are very similar in that they both have a medial line in the forewing that is twice curved and a faint spot on 1A near the margin of the hindwing, but they are externally distinguishable. In *Milgithea* the postmedial line has a small patch of white scales toward the outer margin and extends from  $R_5$  toward the costa basally, but in *Toripalpus* the postmedial line extends from  $R_5$  toward the outer margin and toward the base of the wing after  $CuA_2$ . Both *Milgithea* and *Toripalpus* have an elongated scape, but the scape extension of *Milgithea* has secondary fingerlike projections. The second segment of the labial palpus of the *Milgithea* is tubular, and in *Toripalpus* it is simple with no modifications. *Milgithea* has a U-shaped sclerotized structure at the base of the uncus that is absent in *Toripalpus*. The signa of *Milgithea* are two spinelike, scobinate projections, whereas the signa are absent in *Toripalpus*.

**Type species.** *Pococera melanoleuca* Hampson, 1896, Trans. Ent. Soc. Lond. Part IV: 458, by original designation. Type locality. Colombia (BMNH).

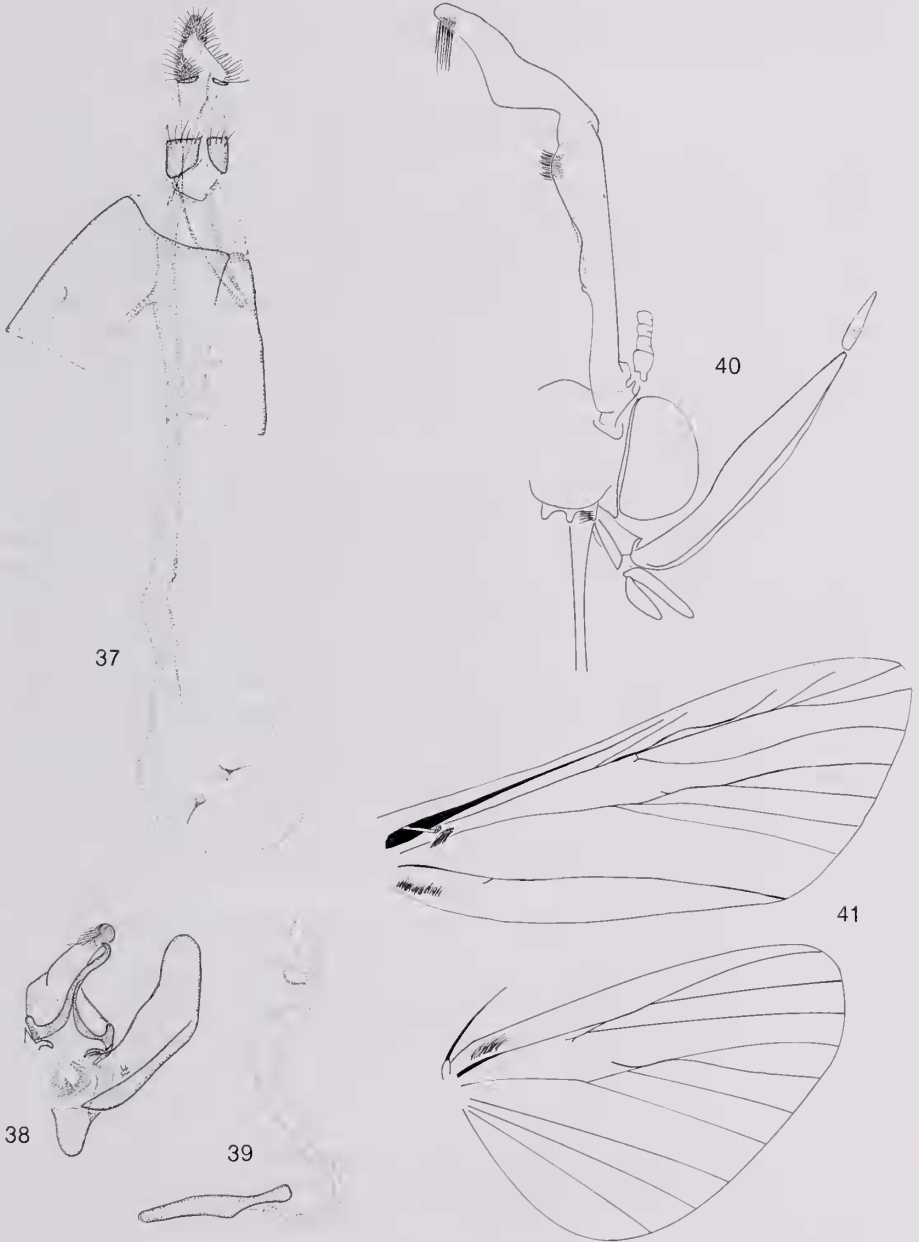
**Species examined.** *alboplagialis* (Dyar), *melanoleuca* (Hampson), *rufiapicalis* (Hampson), *suramisa* (Schaus), *trilinearis* (Hampson).

**Distribution.** Mexico and Florida south to Brazil; the only species in the Caribbean is *trilinearis*.

**Biology.** Adults of *trilinearis* in the USNM have labels that state they were reared from larvae on *Manilkara emarginata* Britton & P. Wilson (Sapotaceae) from Middle Torch Key and Sugarloaf Key, Florida.

**Remarks.** Janse (1931) provided a description and stated that *Milgithea* was close to *Jocara* (based on *trabalis* Grote) when he studied the genitalia. That *Toripalpus trabalis* is closely related to *Milgithea* is substantiated by this study.

*Milgithea* has five species (see Nomenclatural Summary), three added after redefinition of the genus. They are extremely diverse, but can be identified by wing



Figs. 37–41. *Milgithea melanoleuca* (Hampson). 37. Female genitalia #184 MAS. 38. Male genitalia #226 MAS. 39. Aedeagus #226 MAS. 40. Male head #226 MAS. 41. Wings #183 MAS.

color and pattern. The extension of the scape and maxillary and labial palpi in the male are highly modified and variable.

*Oneida* Hulst, 1889

Fig. 122

*Oneida* Hulst, 1889:63.

**Diagnosis.** *Oneida* has one autapomorphy, the base of the juxta lacks a medial lobe, but with a convex midventral deformation (fig. 9 in Solis, 1991); and one homoplasious character, the second segment of the labial palpus is simple, with no modifications (fig. 9 in Solis, 1991), also occurring in *Bibasilaris*, *Tallula*, *Chloropaschia*, *Roeseliodes*, *Cecidipta*, *Deuterollyta*, *Accinctapubes*, *Anarnatula*, *Cacozelia*, and *Toripalpus*.

**Identification synopsis.** *Oneida* can be identified by a forewing pattern (Fig. 122) with the postmedial line concave proximally only to  $M_2$ , and prominent black scales proximally to the postmedial line.

The sister group of *Oneida* is *Dasyvesica*. *Oneida* has a postmedial line concave proximally only from the costa to  $M_2$  and in *Dasyvesica* it is concave from the costa to  $M_1$  and then again at  $CuA_1$  to the posterior margin of the wing. *Oneida* has prominent black scales proximal to the postmedial line from the costa to  $M_2$  and *Dasyvesica* has dark scales proximally to the median line from  $M_2$  to  $1A + 2A$ . The medial line is not present in *Oneida*. *Oneida* is diagnosed by a juxta which lacks a medial lobe with a slight convex midventral deformation, whereas *Dasyvesica* also lacks a medial lobe, but midventrally it is flat. *Oneida* has a second segment of the labial palpus that is simple, but in *Dasyvesica* it is tubular. In *Oneida* the third segment of the maxillary palpus arises at the apex of the second segment, and in *Dasyvesica* it arises at the base of the second segment.

**Type species.** *Oneida lunulalis* Hulst, 1889, *ibid.* 5(3): 64, by monotypy. Type locality: Canada, New York (AMNH).

**Species examined.** *lunulalis* Hulst, *luniferella* Hulst, *marmorata* (Schaus), *mejona* Schaus, *grisiella* Solis.

**Distribution.** Eastern North America from Canada to Florida, west to Colorado, and south to Costa Rica.

**Biology.** One specimen has been reared on red oak in mid-August in southern Ontario (Prentice et al., 1965), one specimen on beech in September in Grenville (Raizenne, 1952), and one specimen on *Quercus* sp. (Solis, 1991), later found to have fed on both red and white oak (T. Harrison, pers. comm.). Specimens have been caught at elevations of up to 7,900 ft.

**Remarks.** Hampson (1896) placed *Oneida* under *Tioga*. Janse (1931) resurrected the genus based on venation. Based on labial and maxillary palpi he believed that *Oneida* was closely related to *atrifascialis* Hulst and *aplastella* Hulst, but this study does not support his hypothesis. The species *atrifascialis* is placed in *Tallula* and *aplastella* in *Pococera*.

The species *grisiella* was added to this genus after re-definition. *Oneida* was recently revised (Solis, 1991). Species are distinguished by wing color and pattern. They are also defined by dimensions of male genitalic components and the ratio of signum length to diameter of its base in the female.

*Phidotricha* Ragonot, 1888

Figs. 42–46, 123

*Phidotricha* Ragonot, 1888:139.*Eutrichocera* Hampson, 1904:182. NEW SYNONYMY.*Jocarula* Dyar, 1925:219. NEW SYNONYMY.

**Diagnosis.** *Phidotricha* is diagnosed by one unique autapomorphy, the hairlike setae on the antennae long and appressed on ventral side, and by one homoplasy, the tip of the tegumen sclerite as broad as the base (Fig. 44), as in *Quadraforma* and *Pococera*.

**Identification synopsis.** *Phidotricha* can be identified by a forewing pattern (Fig. 123) with the postmedial line curving toward the outer margin at  $M_2$  and a median line with dark scales from  $M_2$  to the posterior margin.

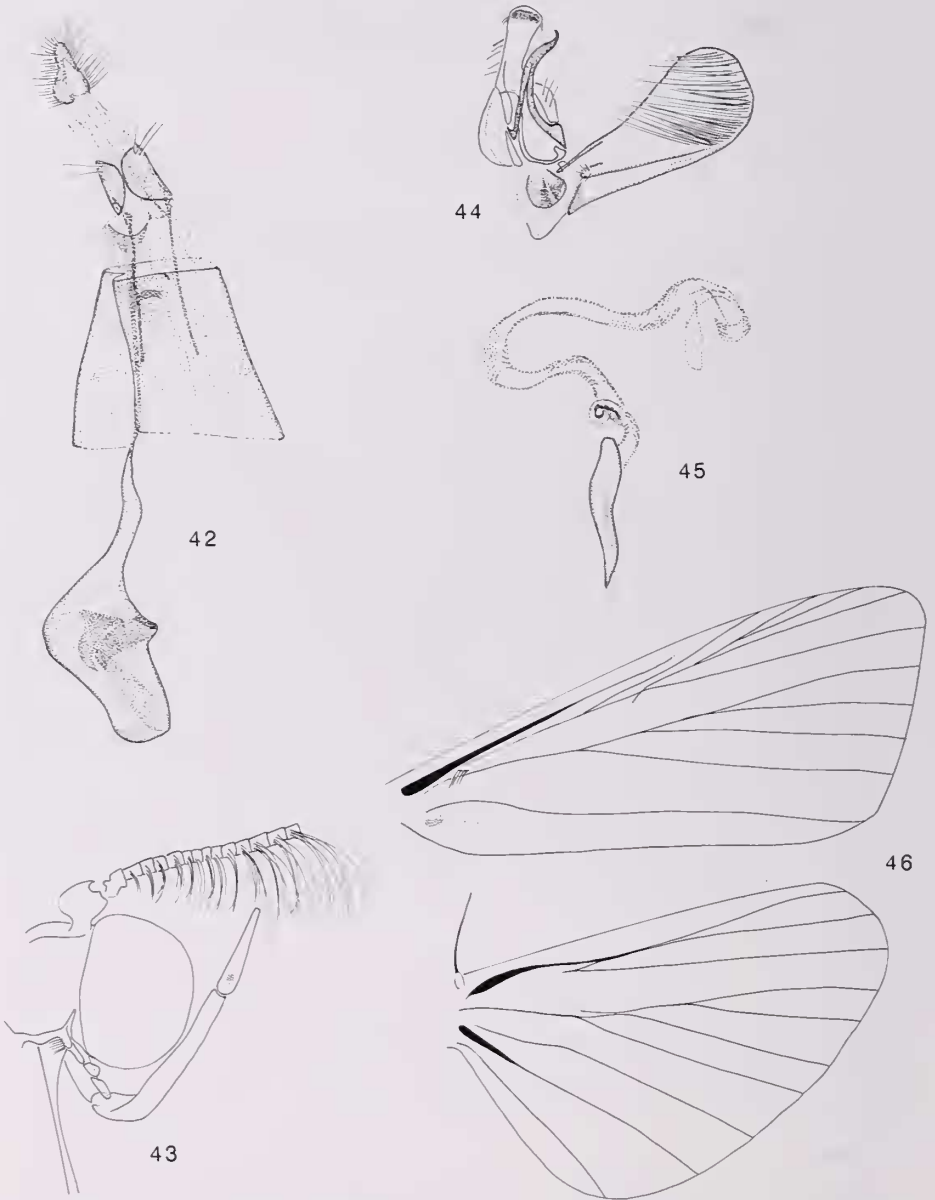
*Phidotricha* is the sister group of *Tallula*. Based on wing pattern, it is difficult to confuse the two, but *Phidotricha* can be confused with some species of *Pococera*. The males of *Phidotricha* have the very long hairlike setae on the antenna that are lacking in *Pococera* males. Males and females of *Phidotricha* can be distinguished by a median line in the forewing with dark scales from  $M_2$  to the posterior margin that does not occur in *Pococera*. *Phidotricha* and *Pococera* share many homoplasies, but *Phidotricha* has a scape that is not elongated, and is elongated in *Pococera*. The second segment of the labial palpus is concave in *Phidotricha* and tubular in *Pococera*. The third segment of the maxillary palpus is at the apex of the second segment in *Phidotricha* but at the base of the second segment in *Pococera*. In the forewing  $R_1$  and  $R_2$  are separate in *Phidotricha*, but fused in *Pococera*.  $R_3$  and  $R_4$  of the forewing in *Phidotricha* are fused, but separate in *Pococera*. The discocellular cell in *Phidotricha* is half or less the forewing length, and in *Pococera* it is greater than half the length. In *Phidotricha* the sclerotized structure at the base of the uncus is triangular-shaped, but it is U-shaped in *Pococera*. The width of the uncus at the caudal end is not wider than the width at the midpoint in *Phidotricha*, but it is wider than the midpoint in *Pococera*. The medial lobe at the base of the valva is absent in *Phidotricha* and present in *Pococera*.

**Type species.** *Phidotricha erigens* Ragonot, 1888, *ibid.* 6(8): 139, by monotypy. Type locality. Puerto Rico (MNHP). *Eutrichocera* Hampson, 1904, *ibid.* 14 (81): 182. Type species: *E. paurolepidalis* Hampson by monotypy. *Jocarula* Dyar, 1925, *ibid.* 13: 219. Type species: *J. agriperda* Dyar by monotypy.

**Species examined.** *agriperda* (Dyar), *erigens* Ragonot, *insularella* (Ragonot), *limalis* (Schaus), *sadotha* (Schaus), *vedastella* (Schaus).

**Distribution.** Southern Florida and northern Mexico to Brazil. Common in the Caribbean.

**Biology.** Specimens have been reared on major agricultural crops such as corn, sorghum, lima beans and tropical fruit plants such as tamarind and loquat. The biology of *erigens* Ragonot, which in the economic literature has been misidentified as *atramentalis* Lederer, was described by Hoyle (1961), and the larval and pupal stages described by Passoa (1985). Martorell (1976) listed *atramentalis* on *Clerodendrum squamatum* Vahl (Verbenaceae), *Mangifera indica* L. (Anacardiaceae) and buds of *Terminalia catappa* L. (Combretaceae); and *insularella* in "bulbs" of *Agave sisalana* Perrine (Amaryllidaceae).



Figs. 42–46. *Phidotricha erigens* Ragonot. 42. Female genitalia #846 MAS. 43. Male head #845 MAS. 44. Male genitalia #845 MAS. 45. Aedeagus #845 MAS. 46. Wings #521 MAS.



**Remarks.** Hampson (1896) synonymized *Phidotricha erigens* under *Pococera atramentalis* based on the lack of an extension from the scape. Janse (1931) found it "peculiar" that certain aspects to the genitalia of *atramentalis* and *gibella*, the type of *Pococera*, were so different. I resurrected *Phidotricha* when the types of *erigens* Ragonot and *atramentalis* Lederer were studied and found not to be conspecific or congeneric. In this study *atramentalis* is placed in *Tallula*. Holland and Schaus (1925) synonymized the two species and placed them in *Pococera* as did Hampson (1896).

*Phidotricha* has seven species names (see Nomenclatural Summary) although it is not clear how many biological species are involved. Delineation of species may prove to be difficult because genitalia and head structures appear similar, varying only in size. Species are recognized by wing color and pattern.

*Roeseliodes* Warren, 1891

Figs. 47–51, 124

*Roeseliodes* Warren, 1891:435.

**Diagnosis.** *Roeseliodes* has many autapomorphies: a reduced proboscis, a clypeus with median lobe absent (Fig. 51), hindwing with  $CuA_2$  lacking and  $M_2$  and  $M_3$  fused (Fig. 50), an uncus half as long as vinculum, a juxta with two lateral lobes and pointed at the apex (Fig. 48), and a sclerotized lamella postvaginalis (Fig. 47). The following homoplasious characters also are diagnostic of this genus: a second segment of the labial palpus simple, with no modifications, also occurring in *Bibasilaris*, *Oneida*, *Tallula*, *Chloropaschia*, *Cecidipta*, *Deuterollyta*, *Accinctapubes*, *Anarnatula*, *Cacozeilia*, and *Toripalpus*; the forewing  $R_3$  and  $R_4$  fused, as in *Macalla*; a third anal vein not coincident with the second anal vein, also occurring in *Tallula*, *Phidotricha* and *Tetralopha*, *Oneida*, *Dasyvesica*, and *Anarnatula*; a medial lobe absent at the base of the valva, as in *Tallula*, *Phidotricha*, *Mediavia*, and *Tancoa* and in the outgroup *Macalla*; and the ductus ejaculatorius terminal, which also occurs in *Tancoa*.

**Identification synopsis.** *Roeseliodes* can be identified by the forewing pattern (Fig. 124) with a black, prominent medial line curving out medially.

*Roeseliodes* is very distinct based on its many autapomorphies. It is most similar to *Cecidipta*. See *Cecidipta* for a comparison with *Roeseliodes*.

**Type species.** *Roeseliodes ochreosticta* Warren, 1891, *ibid.* 7:435, by original designation. Type locality. Rio de Janeiro, Brazil (BMNH).

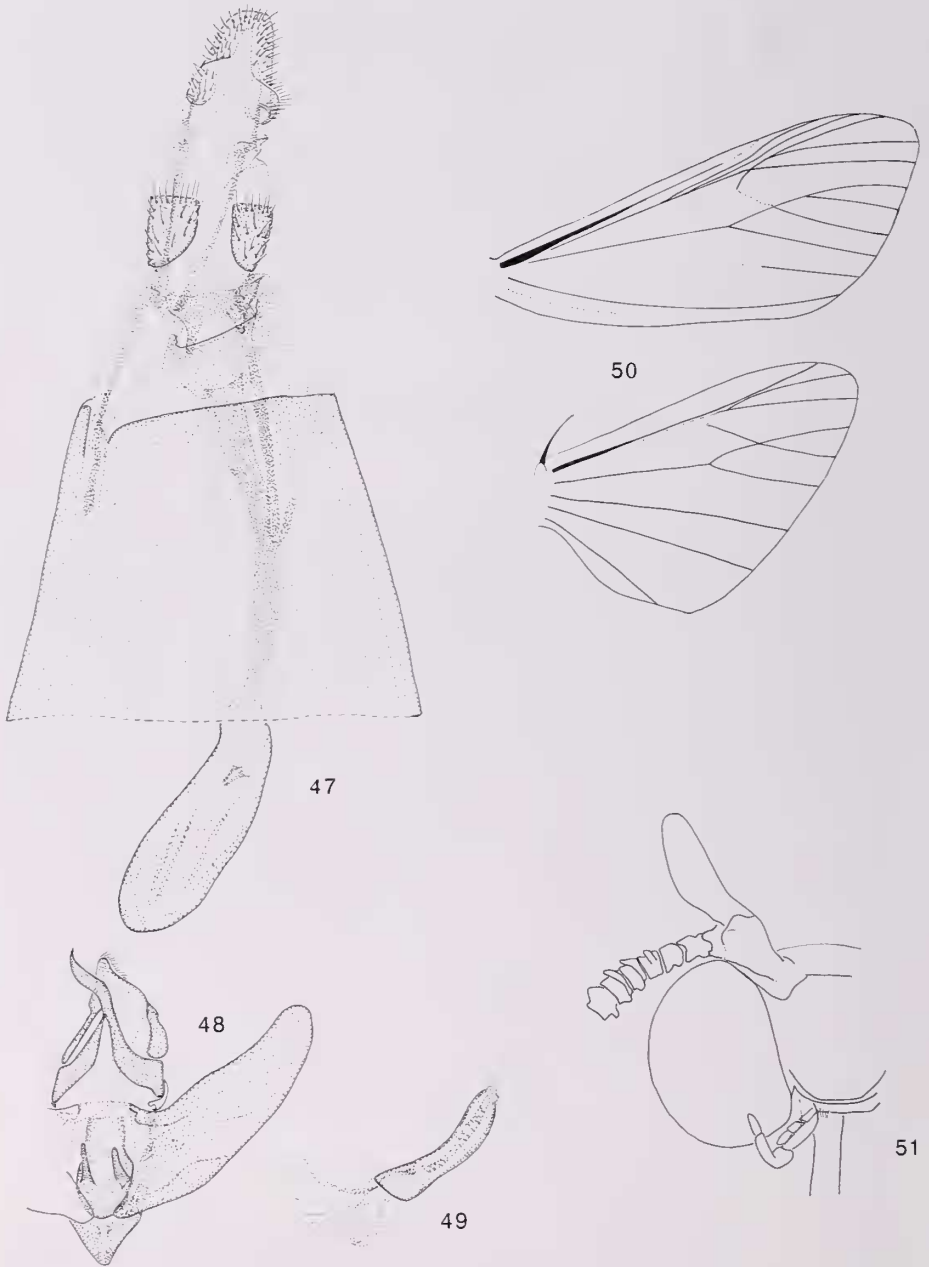
**Species examined.** *celsusalis* (Schaus), *goanta* (Schaus), *goantoides* (Amsel), *ochreosticta* Warren, *petamona* (Schaus), *pontealis* (Schaus).

**Distribution.** Costa Rica to southern Brazil.

**Biology.** No information available.

**Remarks.** Hampson (1896) synonymized *Roeseliodes* under *Stericta*, and Holland and Schaus (1925) later resurrected the genus.

Species from a variety of other genera were included in this genus after re-definition, and it now includes six species (see Nomenclatural Summary) that differ in wing color and pattern. There are also differences in the shape of the uncus and length of the extension of the scape in males, the amount of sclerotization in the lamella postvaginalis, the size of the corpus bursae, and length of the ductus bursa and signa.



Figs. 47–51. *Roeseliodes ochreosticta* Warren. 47. Female genitalia #490 MAS. 48. Male genitalia #491 MAS. 49. Aedeagus #491 MAS. 50. Wings #491 MAS. 51. Male head #491 MAS.

*Tallula* Hulst, 1888  
Figs. 52–56, 125

*Tallula* Hulst, 1888:115.

**Diagnosis.** *Tallula* is diagnosed by one autapomorphy, vein  $CuA_1$  of the forewing arches toward  $M_3$  (Fig. 55), and several homoplasious characters, a simple second segment of the labial palpus, with no modifications (Fig. 54), also occurring in *Bibasilaris*, *Oneida*, *Chloropaschia*, *Roeseliodes*, *Cecidipta*, *Deuterollyta*, *Accinctapubes*, *Cacozelia*, and *Toripalpus*;  $R_s$  of the hindwing more than half the length of discocellular cell, as in *Carthara* and *Cacozelia*; the medial lobe at the base of the juxta small and round, as in *Chloropaschia*, *Quadraforma*, *Pandoflabella*, *Mazdacis*, *Carthara*, *Mediavia*, *Tancoa*, *Deuterollyta*, and *Cacozelia*; and the corpus bursae lacks a signa as in *Toripalpus*.

**Identification synopsis.** *Tallula* can be identified by a forewing pattern (Fig. 125) consisting of an apical area beyond the postmedial line that is always suffused with dark scales, an area between the medial and postmedial line that is almost all white, and an area between the basal and medial line with dark scales.

*Tallula* is the sister group of *Phidotricha*, but as mentioned previously they are not easily confused. *Phidotricha* has gray or brown scales on the entire forewing. *Tallula* has dark scales, usually brown, apically and between the basal and medial line of the forewing, and white scales that form the basal field, especially between the medial and postmedial line. On the male antennae *Phidotricha* has setae that are more than two antennal segments long, whereas in *Tallula* they are only twice as long as two antennal segments. The second segment of the labial palpus is concave in *Phidotricha*, and in *Tallula* it is simple with no modifications. The origin of  $R_2$  in the forewing of *Phidotricha* is distal to the discocellular cell, but in *Tallula* the origin is proximal to the cell.  $R_3$  and  $R_4$  of the forewing are fused in *Phidotricha*, but separate in *Tallula*. In the hindwing  $R_s$  is less than half the length of the discocellular cell in *Phidotricha*, but more than half the length of the cell in *Tallula*. The tip of the tegumen sclerite in *Phidotricha* is as broad as the base, and in *Tallula* it is less broad than the base. In *Phidotricha* the medial lobe at the base of the juxta is long and pointed, but small and round in *Tallula*. *Phidotricha* has two spinelike signa, but *Tallula* lacks the signa.

**Type species.** *Tetralopha atrifascialis* Hulst, 1886, Trans. Am. Ent. Soc. 13: 160, by subsequent designation. Type locality. Texas, USA (AMNH).

**Species examined.** *atrifascialis* (Hulst), *beroella* (Schaus), *fieldi* Barnes & McDunnough, *melazonalis* Hampson, *watsoni* Barnes & McDunnough.

**Distribution.** In North America species occur from North Carolina to Arizona, Texas, southern California south to Mexico. They are also present throughout Central America to Panama and in the Caribbean. In South America, species occur in Venezuela, Bolivia, French Guiana and the Amazon Basin of Brazil.

**Biology.** Kimball (1965) reported that larvae had been reared on Rutaceae (lemon, orange, grapefruit) in Florida. Members of this genus have been reared on live oak in Mississippi according to specimens in the USNM.

**Remarks.** Hampson (1896) sank *Tallula* under *Tioga*. Janse (1931) used *atrifascialis* Hulst for his study of the genus. He summarized Hampson's comparison



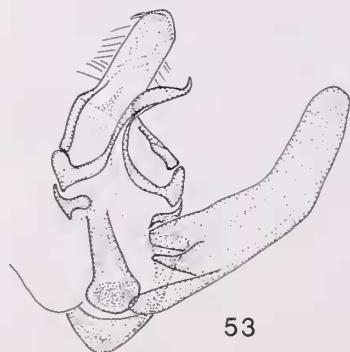
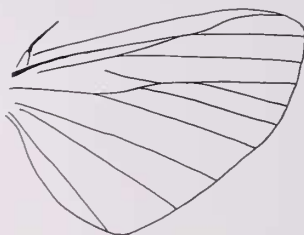
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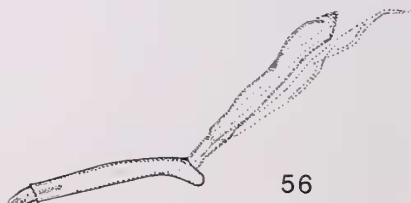
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Figs. 52-56. *Tallula atrifascialis* Hulst. 52. Female genitalia #287 MAS. 53. Male genitalia #383 MAS. 54. Male head #826 MAS. 55. Wings #287 MAS. 56. Aedeagus #287 MAS.

between *Tioga* and *Pococera* and discussed the validity of the wing venation characters as used by Hampson. Holland and Schaus (1925) placed most of the species under the genus *Tioga*. Munroe (1983) resurrected *Tallula* and placed *Tioga* as a junior synonym of *Tetralopha*.

Many of the species were already included due to their external similarity. It has 11 species (see Nomenclatural Summary), but I suspect that many are synonyms, because little or no variation was apparent in descaled structures. They differ only in size and wing pattern.

*Tancoa* Schaus, 1922

Figs. 57–62, 126

*Tancoa* Schaus, 1922:217.

**Diagnosis.** *Tancoa* has three autapomorphies found in the male genitalia: presence of *socii*, a membranous extension at the apex of the costa of valva, and a dorsocaudal extension from the tegumen (Fig. 59). Several homoplasious characters also diagnose this genus: a third segment of the maxillary palpus arising at the midpoint of the second segment, also occurring in *Mazdacis*; a sclerotized pattern on the eighth abdominal sternum, also occurring in *Chloropaschia*; absence of a medial lobe at base of valva, which is also absent in *Roeseliodes*, *Tallula*, *Phidotricha*, *Mediavia*, and the outgroup *Macalla*; juxtal arms do not extend to the costa of valva as in *Roeseliodes*, *Cecidipta*, *Carthara*, *Mediavia*, *Oneida*, *Dasyvesica*, *Deuterollyta*, *Ac-cinctapubes*, *Bibasilaris*, *Anarnatula*, and *Lacalma*; and the ductus ejaculatorius terminal, also occurring in *Roeseliodes*.

**Identification synopsis.** This genus can be identified by narrow wings and lines or spots of dark scales basal to the medial line of the forewing (Fig. 126).

The genus *Tancoa* is the sister group of *Pococera*. See *Pococera* for a comparison of the two genera.

**Type species.** *Deuterollyta calitas* Druce, 1899, Biol. Cent. Amer., Ins. Lep.-Het. II: 547, by subsequent designation. Type locality. Bugaba, Panama (BMNH).

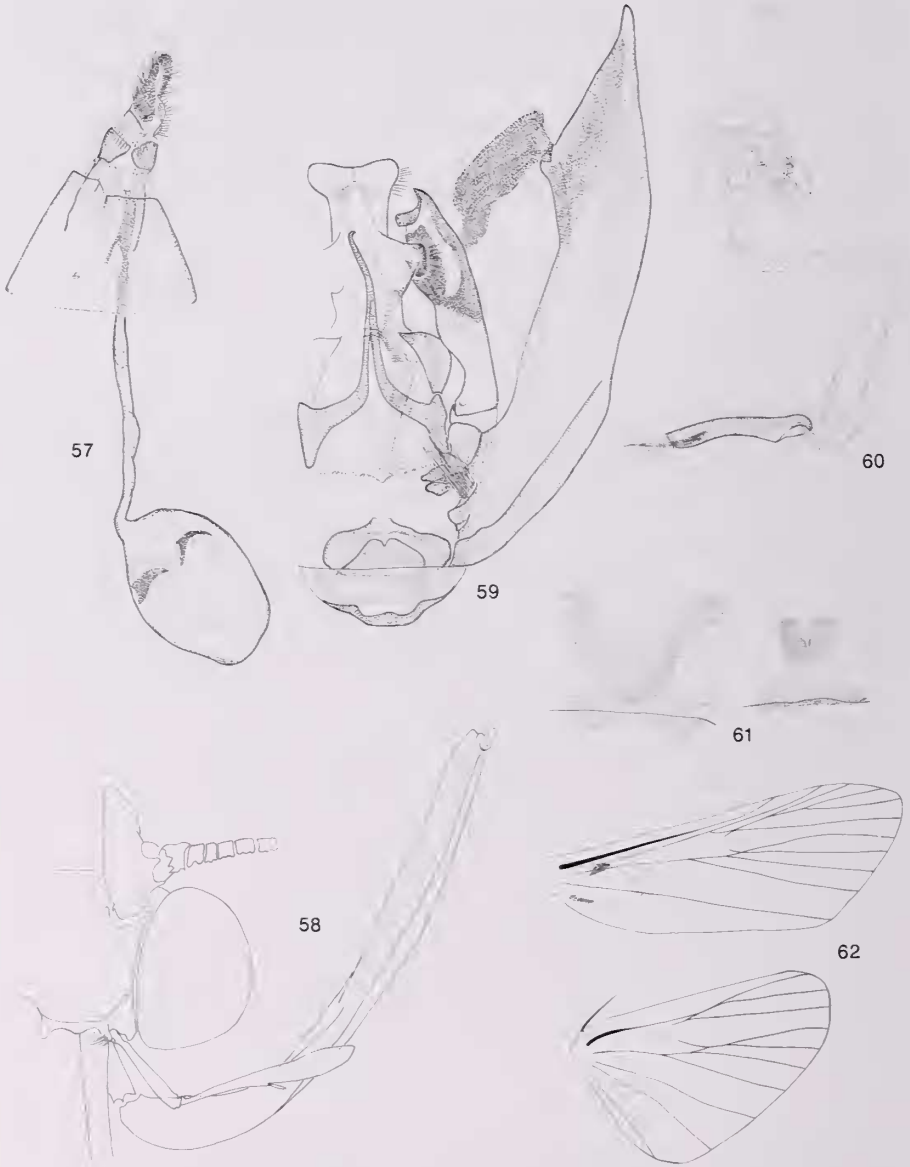
**Species examined.** *attenualis* (Hampson), *calitas* (Druce), *sphaerophora* (Dyar), *crinita* (Schaus), *erlupha* Schaus, *pallidifusa* (Dognin), *quiriguana* (Schaus).

**Distribution.** Mexico (Yucatan) to Peru and Brazil, with one record from Trinidad.

**Biology.** Two new species in the collection of Vitor O. Becker (Planaltina, Brazil) were reared one on *Emmotum nitens* Miers (Icacinaceae), and the other on *Qualea grandiflora* Martius (Vochysiaceae).

**Remarks.** Janse (1931) redescribed *Tancoa* and stated that the "genitalia are very peculiar and would place *Tancoa* in a group by itself." Its affinity was unknown to Janse. This study places *Tancoa* as the sister group to *Pococera*.

Most of the ten species in the genus are very similar externally and were already included in the genus (see Nomenclatural Summary). They can be distinguished by wing color and pattern; shape of the apex of the uncus, valva, socius, extension from the tegumen; scale tuft on the valva; and sclerotization of the eighth abdominal sternum. The extension from the scape and the length of the third segment of the maxillary palpus also may provide information at the species level.



Figs. 57–62. *Tancoa calitas* (Druce). 57. Female genitalia #837 MAS. 58. Male head #836 MAS. 59. Male genitalia #836 MAS. 60. Aedeagus #836 MAS. 61. Eighth abdominal tergum and sternum #836 MAS. 62. Wings #836 MAS.

*Pococera* Zeller, 1848

Figs. 63–69, 127

*Pococera* Zeller, 1848:874–875.

*Tetralopha* Zeller, 1848:879. **REVISED SYNONYMY.**

*Lanihape* Clemens, 1860:206–207. **REVISED SYNONYMY.**

*Hemimattia* Lederer, 1863:347. **REVISED SYNONYMY.**

*Benta* Walker, 1863:112. **REVISED SYNONYMY.**

*Auradisa* Walker, [1866] 1865:1504. **REVISED SYNONYMY.**

*Saluda* Hulst, 1888:113. **REVISED SYNONYMY.**

*Katona* Hulst, 1888:113. **REVISED SYNONYMY.**

*Loma* Hulst, 1888:114. **REVISED SYNONYMY.**

*Wanda* Hulst, 1888:114. **REVISED SYNONYMY.**

*Tioga* Hulst, 1888:113. **NEW SYNONYMY.**

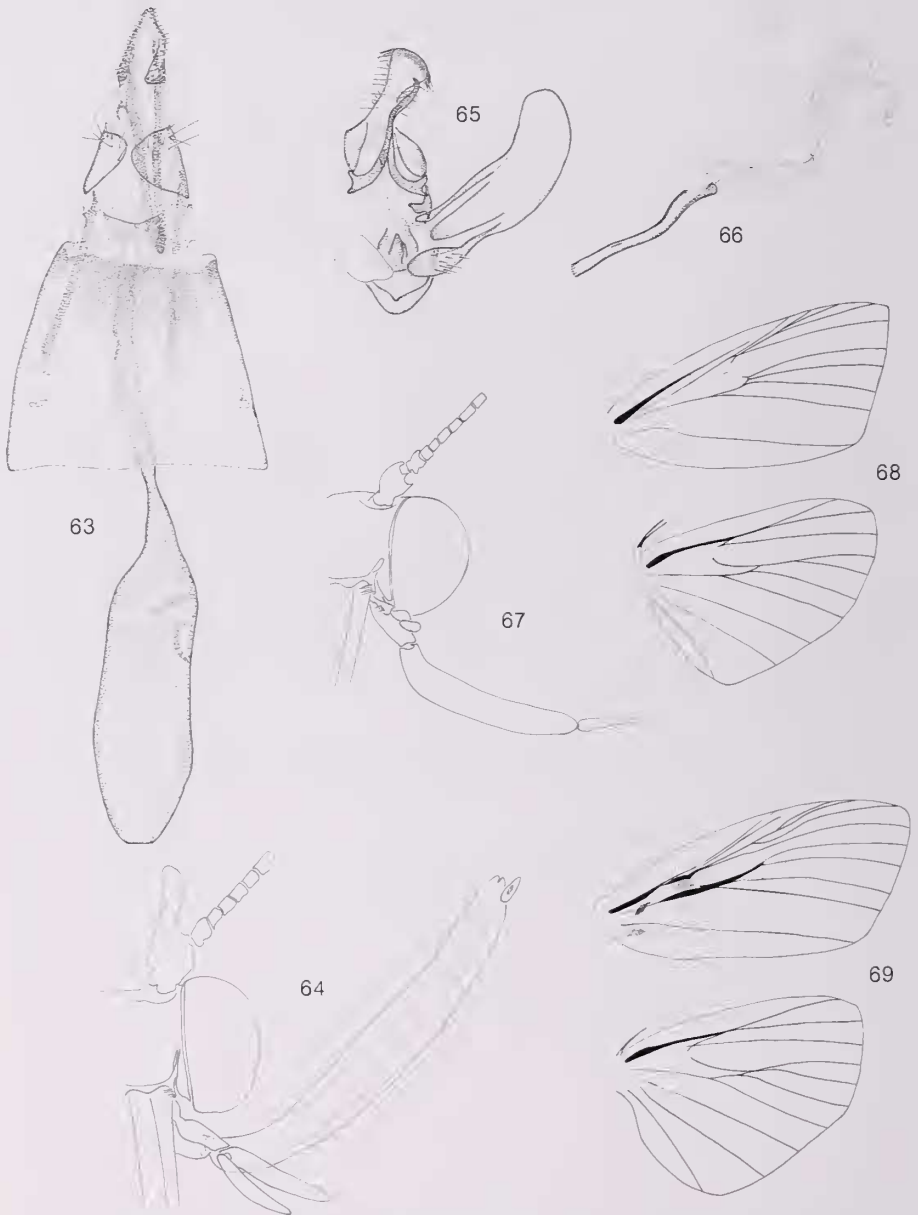
*Attacapa* Hulst, 1889:71. **REVISED SYNONYMY.**

**Diagnosis.** *Pococera* is diagnosed by a unique combination of homoplasious characters, usually a costal fold in the forewing of the male, a discocellular cell half or less than the length of forewing, also occurring in *Mazdaeis*, 3A not coincident with 1A + 2A, as in *Roeseliodes*, *Tallula*, *Phidotricha*, *Oneida*, *Dasyvesica*, and *Anarnatula*, the tip of the tegumen sclerite as broad as the base, as in *Quadraforma* and *Phidotricha*, the base of juxta with the medial lobe long and pointed as in *Phidotricha*, *Milgitha*, *Accinctapubes*, *Bibasilaris*, *Anarnatula*, and *Toripalpus*, a single row of setae on the caudal end of uncus, as in *Cecidipta*, *Phidotricha*, and *Tallula*, and the width at the caudal end of the uncus wider than the width of the midpoint, as in *Cecidipta*, *Mediavia*, *Bibasilaris* and *Lacalma*.

**Identification synopsis.** *Pococera* can be identified by a wing pattern (Fig. 127) with the postmedial line extending to outer margin at  $M_2$  and the postmedial line that is faintly present in the hindwing.

The sister group of *Pococera* is *Tancoa*, but they can easily be differentiated. *Pococera* has an elongated scape, and *Tancoa* does not. *Pococera* has the third segment of the maxillary palpus arising at the base of the second segment, and *Tancoa* has the third segment arising at the midpoint of the second segment. In the hindwing,  $Sc+R_1$  and  $R_s$  are separate in *Tancoa*, but fused in *Pococera*. Setae at the caudal end of the uncus are a single row on *Pococera*, but in *Tancoa* the setae arise between the caudal end and half the length of the uncus. The width of the uncus at the caudal end is wider than the midpoint of the uncus in *Pococera*, but not wider in *Tancoa*. *Pococera* has a medial lobe at the base of the valva that is absent in *Tancoa*. The ductus ejaculatorius is terminal in *Tancoa* and subterminal in *Pococera*. The juxtal arms do not extend to the costa of the valva in *Pococera*, but extend beyond the costa in *Tancoa*. The medial lobe at the base of the juxta in *Pococera* is long and pointed, but small and round in *Tancoa*.

**Type species.** *Pococera gibella* Zeller, 1848, *ibid.* XI: 874, by monotypy. Type locality. S. del Rey: Sello, Brazil (HMB). *Tetralopha* Zeller, 1848, *ibid.* XI: 879. Type species: *T. militella* Zeller designated by Holland and Schaus, 1925, *Ann. Carn. Mus.* 16: 60. *Lanihape* Clemens, 1860, *ibid.* 5: 206–207. Type species: *L. platanella* Clemens designated by Fletcher and Nye, 1984, *Generic Names of Moths of the World*,



Figs. 63-69. *Pococera militella* (Zeller). 63. Female genitalia #501 MAS. 64. Male head #838 MAS. 65. Male genitalia #838 MAS. 66. Aedeagus #838 MAS. 67. Female head #839 MAS. 68. Female wings #839 MAS. 69. Male wings #838 MAS.



5: 79. *Hemimatia* Lederer, 1863, *ibid.* 7: 347. Type species: *H. scortealis* Lederer, designated by Fletcher and Nye, 1984, *ibid.* 5: 68. *Benta* Walker, 1863, *ibid.* 27: 112. Type species: *B. expandens* Walker, 1863, by monotypy. *Auradisa* Walker, [1866] 1865, *ibid.* 34: 1504. Type species: *A. gelidalis*, by monotypy. *Saluda* Hulst, 1888, *ibid.* 4: 113. Type species: *Lanthaphe asperatella* Clemens, 1860, *ibid.* 5: 207, by original designation. *Katona* Hulst, 1888, *ibid.* 4: 113. Type species: *K. euphemella* Hulst, 1888, by original designation. *Loma* Hulst, 1888, *ibid.* 4: 114. Type species: *L. nephelotella* Hulst, 1888, by original designation. *Loma* Hulst, 1888, *ibid.* 4: 114. Type species: *L. nephelotella* Hulst, by original designation. *Wanda* Hulst, 1888, *ibid.* 4: 114. Type species: *Tetralopha baptisiella* Fernald, 1887, by original designation. *Tioga* Hulst, 1888, *ibid.* 4: 113. Type species: *Tetralopha aplastella* Hulst, by original designation. *Attacapa* Hulst, 1889, *ibid.* 5: 71. Type species: *Tetralopha callipepella* Hulst, 1888, by monotypy.

**Species examined.** *aplastella* (Hulst), *asperatella* (Clemens), *basalis* (Jones), *callipepella* (Hulst), *euphemella* (Hulst), *expandens* (Walker), *fusculotella* (Ragonot), *gelidalis* (Walker), *gibella* Zeller, *griseella* (Barnes & Benjamin), *humerella* (Ragonot), *iogalis* (Schaus), *maritimalis* (McDunnough), *melanogrammos* (Zeller), *militella* (Zeller), *provoella* (Barnes & Benjamin), *robustella* Zeller, *scortealis* (Lederer), *subcanalis* (Walker), *texanella* Ragonot, *tiltella* (Hulst).

**Distribution.** Southern areas of eastern and midwestern provinces of Canada to Brazil.

**Biology.** Most of the biological information on the species has been compiled by the Canadian Department of Agriculture (Raizenne, 1952; Prentice et al., 1965) as they are occasional pests of deciduous trees and conifers. The larvae have been reared on very diverse host plants from pines to legumes to oaks (see Table 2). Most of the species are colonial webbers and folders of leaves. Allyson (1977) conducted a larval study of nine species and described the habits. Studies on larvae feeding on sycamore (Thompson and Solomon, 1986) suggest multiple broods in *militella*.

**Remarks.** Hampson (1896) synonymized *Tetralopha* under *Pococera*. Holland and Schaus (1925) resurrected *Tetralopha* and designated the type species as *militella* Zeller. They did not study the type of *Pococera* and stated that *gibella* Zeller was not found "in any collection in the United States." Janse (1931) stated that he did see two specimens of *gibella* sent to him by the Berlin Zoological Museum, but he did not see the type, and the male sent to him lacked the head. He used a female specimen of *asperatella* Clemens as an example of *Tetralopha* because he did not have a specimen *militella* Zeller. Janse used Hampson's key to describe the difference between the two genera. Hampson used the absence of an extension from the scape in two species of *Pococera* to separate them from other species with a process. *Gibella* does have a process, but I found it to be short in comparison to that of *militella* after denuding the head. Hampson also used the presence of a deep furrow in the cell of the forewing of the male *Pococera*, but absent in *Tetralopha*. This furrow is present in species of *Tetralopha*, but it is not prominent as in *Pococera*. Hampson also used wing venation to separate the two genera, but the males of *Tetralopha* have a highly variable and deformed venation co-occurring with a costal fold.

This genus contains 44 species names (see Nomenclatural Summary) and has always been regarded as difficult at the species level. Some species can be recognized by wing pattern and color. A costal fold is present in males of most species, but is

Table 2. Genera and number of species of the *Pococera* complex reported to feed on each host-plant family (see Taxonomic Synopsis for further details).

Plant family	Moth genus	No. species
Aceraceae	<u>Pococera</u>	2
Amaryllidaceae	<u>Phidotricha</u>	1
Anacardiaceae	<u>Phidotricha</u>	1
	<u>Pococera</u>	1
Betulaceae	<u>Pococera</u>	1
Carpinaceae	<u>Pococera</u>	1
Combretaceae	<u>Phidotricha</u>	1
Corylaceae	<u>Pococera</u>	1
Ericaceae	<u>Pococera</u>	1
Euphorbiaceae	<u>Cecidipta</u>	1
Fabaceae	<u>Cacozelia</u>	1
	<u>Phidotricha</u>	1
	<u>Pococera</u>	11
Fagaceae	<u>Pococera</u>	4
	<u>Oneida</u>	2
	<u>Tallula</u>	1
Hamamelidaceae	<u>Pococera</u>	1
Icacinaceae	<u>Tancoa</u>	1
Juglandaceae	<u>Pococera</u>	1
Lauraceae	<u>Deuterollyta</u>	6
	<u>Accinctapubes</u>	1
Malvaceae	<u>Phidotricha</u>	1
Moraceae	<u>Cecidipta</u>	1
Pinaceae	<u>Pococera</u>	3
Platanaceae	<u>Pococera</u>	1
Poaceae	<u>Phidotricha</u>	1
Polygonaceae	<u>Toripalpus</u>	2
Rhamnaceae	<u>Pococera</u>	1
Rosaceae	<u>Phidotricha</u>	1
	<u>Pococera</u>	1
Rubiaceae	<u>Phidotricha</u>	1
Rutaceae	<u>Tallula</u>	2
Salicaceae	<u>Pococera</u>	1
Sapotaceae	<u>Milgitha</u>	1
Simaroubaceae	<u>Deuterollyta</u>	1
Ulmaceae	<u>Pococera</u>	2
Verbenaceae	<u>Phidotricha</u>	1
Vochysiaceae	<u>Tancoa</u>	1

lacking in two species. It is suspected that comparative dimensions of the female signa and male uncus may be useful at the species level. Heads of the males vary widely from having a definite extension from the scape to an extension that barely protrudes from the scape to one that is simple, as in females, and a long third segment of the maxillary palpus arising from the base of the second segment. It may be that larvae and pupae will provide reliable characters at the species level.

Species have been thought to be highly host specific, but in at least one case this has been shown to be untrue. Allyson (1977) reported that *asperatella* Clemens has been reared on *Acer*, *Ulmus*, *Fagus*, *Carya*, *Ostrya*, *Gleditsia* and *Rhus*.

*Toripalpus* Grote, 1877

Figs. 70–74, 128

*Toripalpus* Grote, 1877:265.

**Diagnosis.** This genus has one homoplasy, the corpus bursae lacks signa as in *Tallula*.

**Identification synopsis.** *Toripalpus* can be identified by a forewing pattern (Fig. 128) with the postmedial line extending from R5 toward the outer margin and toward the base of the wing after CuA<sub>2</sub>, and a medial line that is twice curved. A faint spot on 1A of the hindwing is present near the margin.

*Toripalpus* is found at the base of the cladogram of the *Pococera* complex. See *Cacozelia*, which it resembles externally, and *Milgitha*, which it is closely related to, for comparisons with these genera.

**Type species.** *Toripalpus breviornatalis* Grote, 1877, *ibid.* 19: 265, by monotypy. Type locality. Texas, Colorado, USA (AMNH).

**Species examined.** *breviornatalis* Grote, *trabalis* Grote.

**Distribution.** *Trabalis* occurs from British Columbia south to New Mexico, and *breviornatalis* occurs only in Texas, Oklahoma, and Florida.

**Biology.** The following host plant information is available at the USNM: *breviornatalis* on *Eriogonum tomentosum* Michx. Benth. (Polygonaceae) from Florida, and *trabalis* on *Eriogonum fasciculatum* from southern California. Comstock and Damers (1935) described the larva and pupa of *trabalis* Grote.

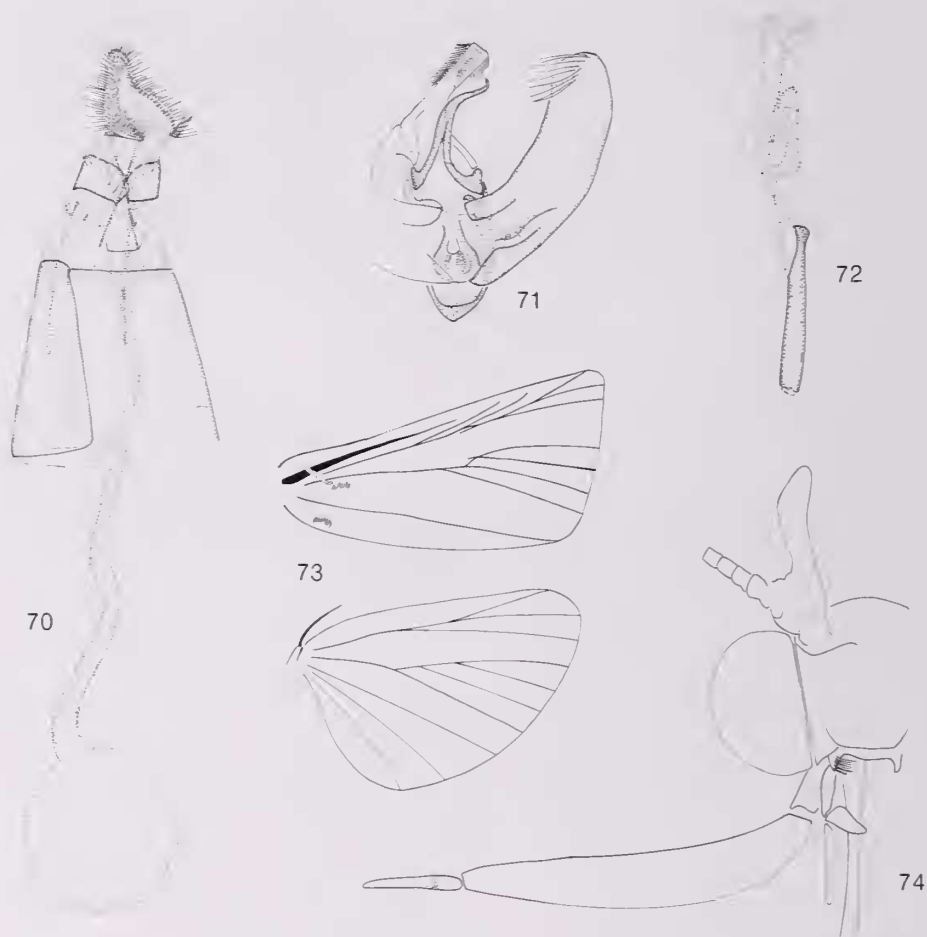
**Remarks.** *Toripalpus* was resurrected for two species that were previously placed in *Jocara* (see Nomenclatural Summary); it may be distinguished by wing pattern and color. Other differences may be seen in the shape of the clypeus, second and third segments of the maxillary palpus, and in the wing venation.

**Pandoflabella**, new genus

Figs. 75–79, 129

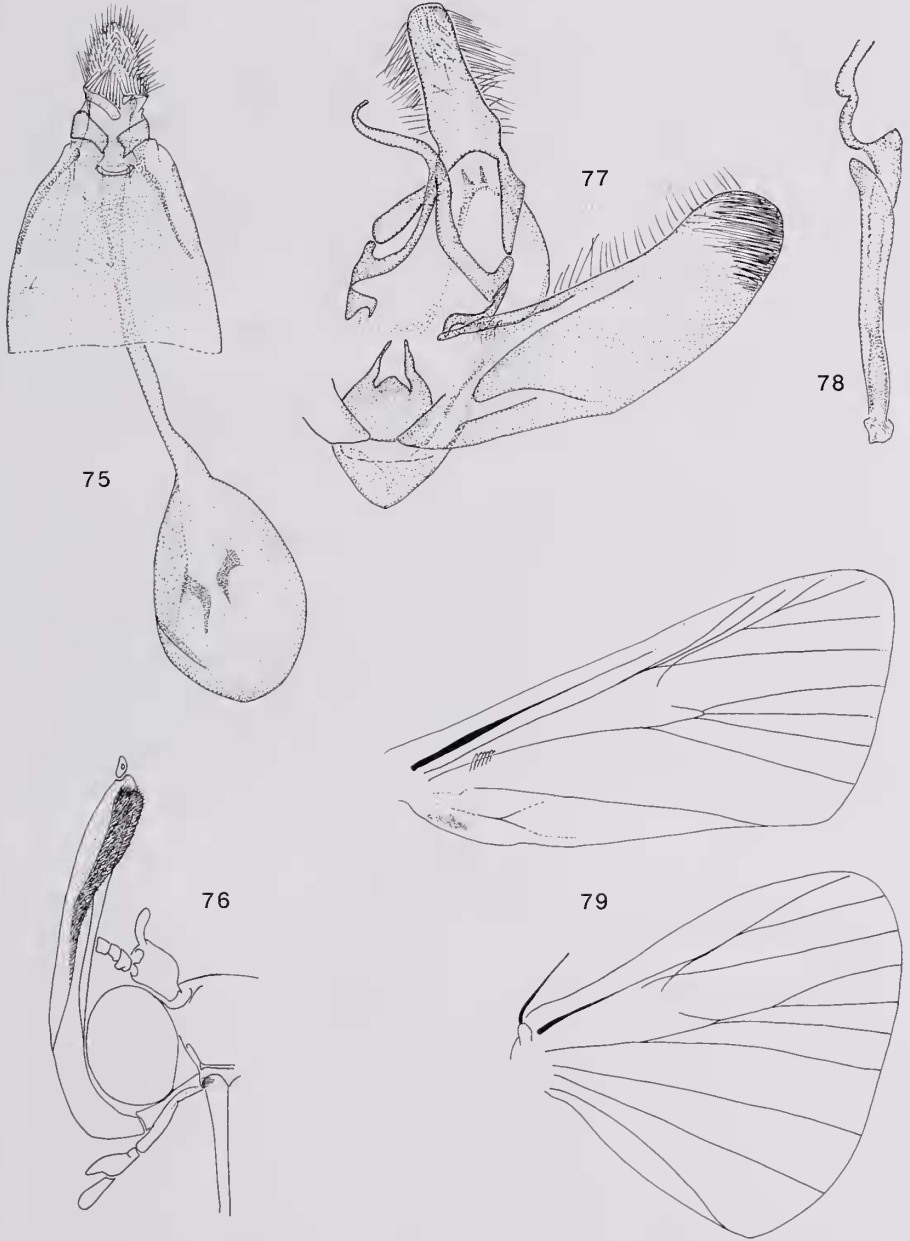
**Diagnosis.** *Pandoflabella* is characterized by an autapomorphy, the flabellate second labial segment (Fig. 76).

**Identification synopsis.** *Pandoflabella* can be identified by the forewing pattern (Fig. 129) with the postmedial line extending toward the outer margin from M<sub>2</sub> to CuA<sub>2</sub>, and a patch of darker scales beyond the postmedial line above M<sub>2</sub>. The medial line is bifurcate, turning sharply toward the base of the wing below CuA<sub>2</sub> and toward the base of the postmedial line about halfway along the width of the wing. The reniform spot is a small black curve.



Figs. 70-74. *Toripalpus* sp. 70. Female genitalia of *T. breviornatalis* Grote #441 MAS. 71. Male genitalia of *T. trabalis* Grote #150 MAS. 72. Aedeagus of *T. trabalis* #150 MAS. 73. Wings of *T. breviornatalis* #440 MAS. 74. Male head of *T. trabalis* #150 MAS.

Species of *Pandoflabella* can be confused with some species of *Chloropaschia* based on the wing pattern, but in *Pandoflabella* the medial line is bifurcate below  $CuA_2$  then curving basally and toward the base of the postmedial line, while in *Chloropaschia* the medial line curves basally only below the reniform spot. In *Chloropaschia* the reniform spot is a dark line, but in *Pandoflabella* it is a black curve. In *Pandoflabella* the extension of the scape is longer than the base of the pedicel, but in *Chloropaschia* it is shorter than the base of the pedicel. The second segment of the labial palpus is flabellate in *Pandoflabella*, but simple with no modifications in *Chloropaschia*. The third segment of the maxillary palpus in *Chloropaschia* arises slightly below the apex of the second segment, but in *Pandoflabella* it arises at the base of the second segment. The first anal vein in *Chloropaschia* is present but absent in *Pandoflabella*. The



Figs. 75–79. *Pandoflabella olivescens* (Schaus). 75. Female genitalia #725 MAS. 76. Male head #724 MAS. 77. Male genitalia #724 MAS. 78. Aedeagus #724 MAS. 79. Wings #724 MAS.

ventral fold of the lamella antevaginalis in *Chloropaschia* is strongly bilobed but equal in width or weakly bilobed in *Pandoflabella*.

**Description.** Male head (Fig. 76): Extension of the scape longer than base of pedicel; third segment of the maxillary palpus arising at base of second segment. Wing (Fig. 79): Retinaculum a group of hooked setae just below Cu. CuP of forewing vein absent; 3A intersecting with 1A + 2A. Hindwing with Sc+R<sub>1</sub> and Rs coincident. Male genitalia (Fig. 77): Juxta with small median lobe; arms of juxta extended to base of costa; median lobe on valva a short, round nub; tegumen sclerite not reaching mid-ventral position, tip less broad than base; base of uncus with U-shaped sclerotized structure; vesica without cornuti. Female genitalia (Fig. 75): Fold of lamella antevaginalis not bilobed or weakly bilobed; two signa present.

**Type species.** *Pococera olivescens* Schaus, 1912, Ann. Mag. Nat. Hist. (8) 9: 659–660. Type locality. Costa Rica (USNM).

**Species examined.** *olivescens* (Schaus), *stenipteralis* (Hampson), *strigidiscalis* (Hampson), *fehina* (Schaus), *nigrilunalis* (Dognin), *nigriplaga* (Dognin), *remberta* (Schaus).

**Distribution.** Southern Mexico to the Matto Grosso in Brazil.

**Biology.** No information available.

**Remarks.** Most of the species in *Pandoflabella* were previously placed in *Auradisa*. *Auradisa* is now a junior synonym of *Pococera*.

*Pandoflabella* is composed of 11 species (see Nomenclatural Summary) and can be distinguished in the male genitalia by variation in shape of the juxta, shape of the valva, shape of the uncus, and the number of setae on the uncus. Other useful characters include the length of the extension of the scape and the nature of certain specialized structures on the ovipositor lobes, and length and width of the signa.

**Etymology.** The name of this genus is derived from the Latin *pando-* meaning “to spread” and the Latin *flabellum* (neuter) meaning “fan” in reference to its autapomorphy.

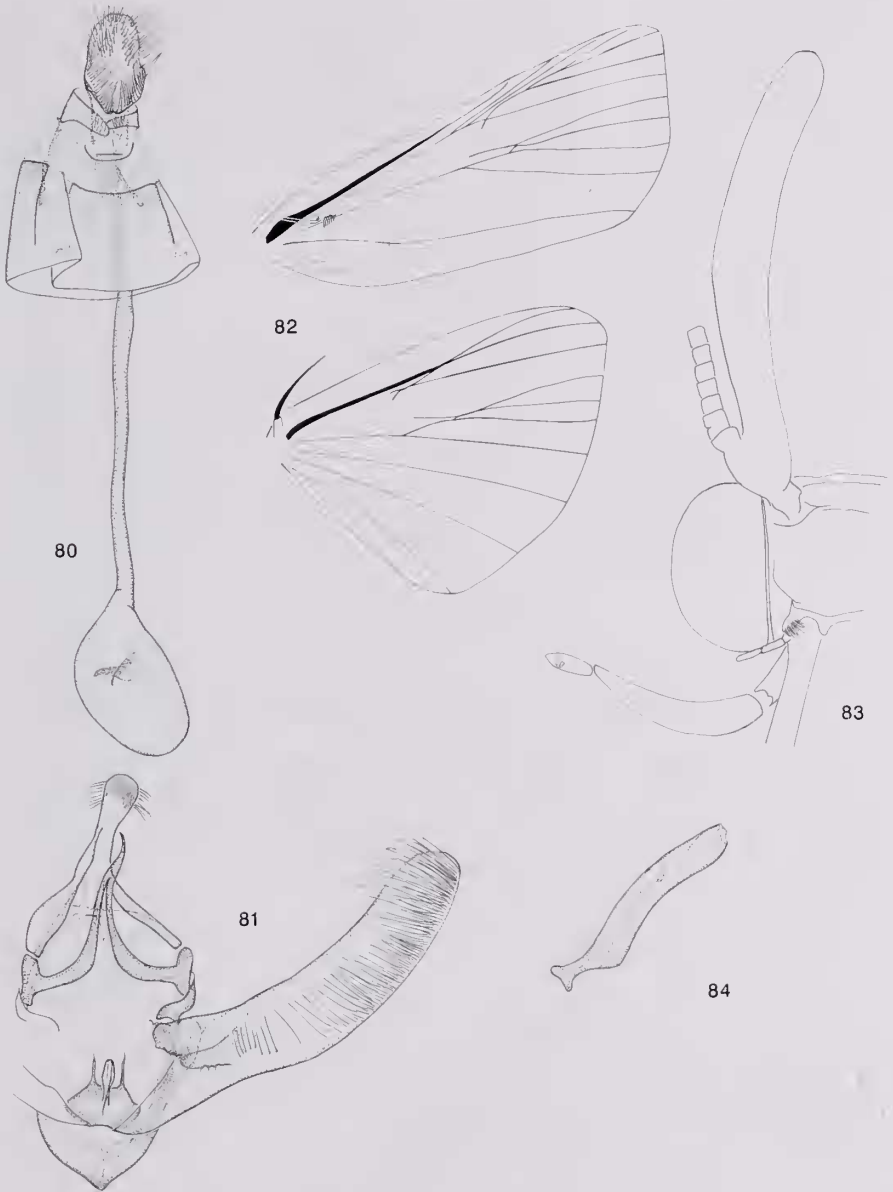
### **Bibasilaris**, new genus

Figs. 80–84, 130

**Diagnosis.** *Bibasilaris* has one autapomorphy, the coecum of the aedeagus is bilobed (Fig. 84).

**Identification synopsis.** The forewing pattern (Fig. 130) has the postmedial line extending toward the outer margin at M<sub>1</sub> and curving toward the base of wing to the posterior margin. The reniform spot is a dark straight line. The hindwing postmedian line is present. *Carthara* is similar in wing length and basal color of the forewing to *Bibasilaris*. But *Carthara* has a second segment of the labial palpus concave, whereas it is simple in *Bibasilaris*. The frenulum hook is absent in *Carthara* and present in *Bibasilaris*. *Carthara* has an uncus that is not wider caudally than at the midpoint, but is wider caudally in *Bibasilaris*. *Carthara* has a juxta with a medial lobe that is small and round, and in *Bibasilaris* it is long and pointed. *Bibasilaris* also has the Rs of the hindwing more than half the length of the discocellular cell, whereas in *Carthara* it less than half the length.

**Description.** Male head (Fig. 83): Scape extension longer than base of pedicel; second segment of labial palpus simple, no modifications; third segment of maxillary



Figs. 80–84. *Bibasilaris trisulcata* (Warren). 80. Female genitalia #229 MAS. 81. Male genitalia #228 MAS. 82. Wings #228 MAS. 83. Male head #228 MAS. 84. Aedeagus #228 MAS.

palpus at apex of second segment. Wing (Fig. 82): Retinaculum a frenulum hook. CuP of forewing absent; 3A intersecting 1A + 2A. Hindwing with Sc+R<sub>1</sub> and Rs coincident. Male genitalia (Figs. 81, 84): Juxta with elongated median lobe; juxtal arms not reaching costa; median lobe on valva short, round nub; tegumen sclerite not reaching midventral position, tip narrower than base; base of uncus with U-shaped sclerotized structure; vesica without cornuti. Female genitalia (Fig. 80): Fold of lamella antevaginalis not bilobed; two signa present.

**Type species.** *Homura trisulcata* Warren, 1891, Ann. Mag. Nat. Hist. (6)7: 434. Type locality. Rio de Janeiro, Brazil (BMNH).

**Species examined.** *erythea* (Druce), *trisulcata* (Warren).

**Distribution.** Guatemala to southeastern Brazil.

**Biology.** No information available.

**Remarks.** The two species included here (see Nomenclatural Summary) were previously placed in *Locastra*, an Old World genus. Length of the wing averages 1.5 cm.

Species are distinguished by external wing morphology and the shape of the uncus in the male genitalia.

**Etymology.** The genus name is derived from the Latin *bi*—meaning “two,” and from the Latin *basilaris* (feminine) meaning at the “base.”

#### ***Accinctapubes*, new genus**

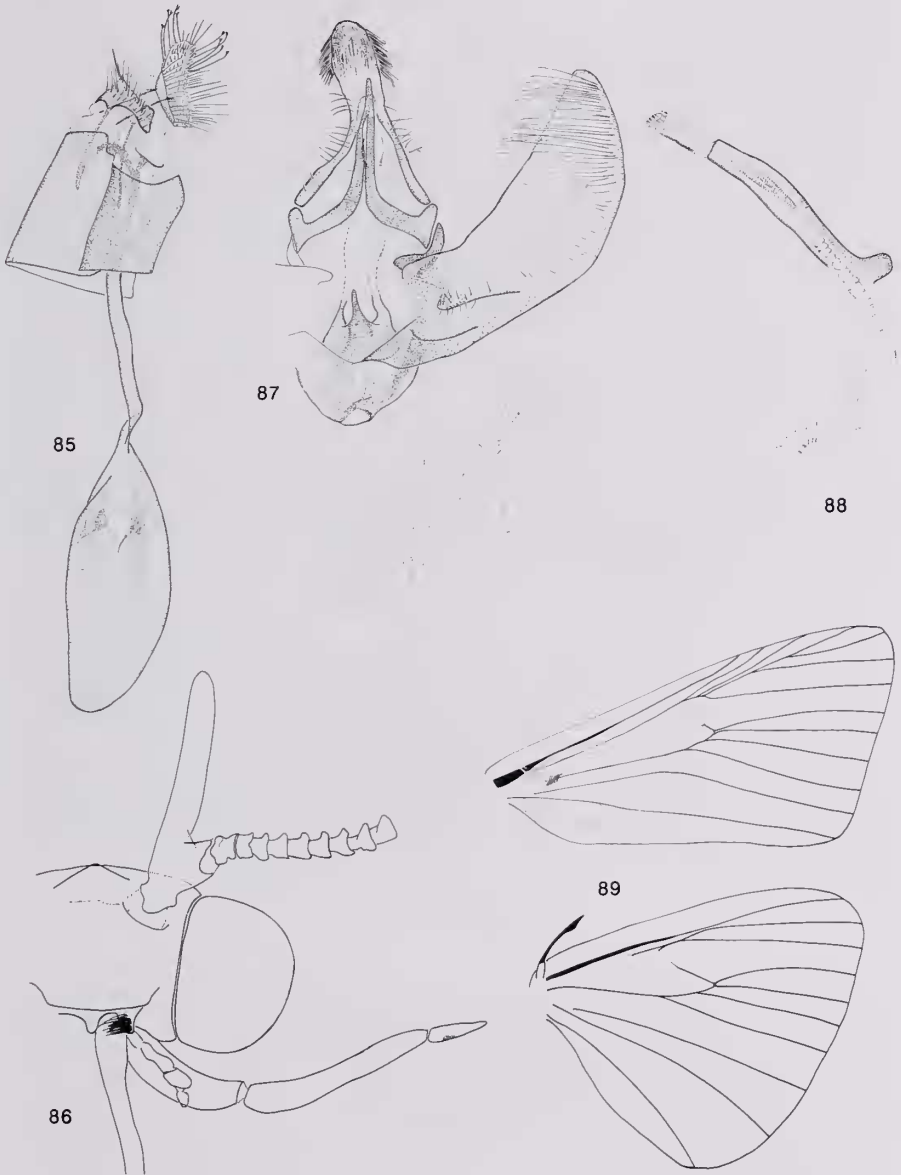
Figs. 85–89, 131

**Diagnosis.** *Accinctapubes* has two autapomorphies, a male frenulum that is bulbous at tip (Fig. 89); and ovipositor lobes with some spatulate setae, that are trifurcate distally (Fig. 85).

**Identification synopsis.** *Accinctapubes* can be identified by the forewing pattern (Fig. 131) with the postmedial line curving toward the outer margin at M<sub>1</sub>. Species are sexually dimorphic, the males with white patches of scales, and the females without. The median line and reniform spot are not prominent. The hindwing post-medial line is prominent from the costal margin to 1A.

*Accinctapubes* is the sister group of the *Cecidipta-Roeseliodes* clade. Species of *Accinctapubes* are approximately midway in wing length between *Cecidipta* and *Roeseliodes* although some females of *Accinctapubes* approach the wing length of some *Cecidipta* males. Fresh specimens of *Accinctapubes* have the base of the forewing green, but this area is beige or white in *Cecidipta*. The apex of the male frenulum in *Cecidipta* is tapered, but in *Accinctapubes* it is bulbous. In the male genitalia *Cecidipta* has a tegumen sclerite that extends beyond the midventral position, whereas in *Accinctapubes* it does not reach a midventral position. The tip of the tegumen sclerite is narrower than the base in *Accinctapubes*, but in *Cecidipta* the tip is broader than the base. *Cecidipta* lacks a sclerotized structure at the base of the uncus, but it is present in *Accinctapubes*. In *Accinctapubes* the caudal end of the uncus is not wider than the midpoint and setae extend to half the length of the uncus; whereas in *Cecidipta* the uncus is wider at the caudal end and setae are in a single row at the caudal end. The arms of the juxta in *Cecidipta* do not extend to the costa of the valva and in *Accinctapubes* they extend beyond the costa. In female *Accinctapubes* some





Figs. 85–89. *Accinctapubes albifasciata* (Druce). 85. Female genitalia #883 MAS. 86. Male head #867 MAS. 87. Male genitalia #867 MAS. 88. Aedeagus #867 MAS. 89. Wings #867 MAS.

of the setae on the ovipositor lobes are spatulate then trifurcate distally, but all setae are simple in *Cecidipta*.

**Description.** Male head (Fig. 86): Scape extension longer than base of pedicel; segment of the second labial palpus simple, no modifications; third maxillary segment arising from base of second. Wing (Fig. 89): Retinaculum a frenulum hook; forewing CuP absent; 3A intersecting 1A + 2A; hindwing with Sc+R<sub>1</sub> and Rs not coincident. Male genitalia (Fig. 87): Juxta with elongated median lobe; juxtal arms not extending to costa; median lobe short, round nub; tegumen sclerite not reaching midventral position, tip narrower than base; base of uncus with U-shaped sclerotized structure; vesica without cornuti. Female genitalia (Fig. 85): Fold of lamella antevaginalis not bilobed or weakly bilobed; two signa present.

**Type species.** *Cecidiptera* [sic] *albifasciata* Druce, 1902, Ann. Mag. Nat. Hist. (7) 9:325. Type locality. Sarayacu, Ecuador (TMP).

**Species examined.** *albifasciata* (Druce), *chionopheralis* (Hampson), *apicalis* (Schaus).

**Distribution.** Southern Mexico to Paraguay and Brazil.

**Biology.** *Albifasciata* has been reared on avocado (Lauraceae) (Dyar, 1912). In Trinidad the species is known as the "avocado moth," and "The caterpillars are gregarious and live in nests made by webbing leaves and branches with tough silk" (Kaye and Lamont, 1927 from Williams, 1922, p. 62: "Fruit Cultivation in Trinidad" "Pests of Avocados: Webbing Caterpillars").

**Remarks.** Two newly included species were previously placed in the Old World genus *Stericta*.

*Accinctapubes* has four species (see Nomenclatural Summary), but there is at least one new species in the USNM collection. Species are distinguished by the presence or absence of a thick patch of setae on the dorsal surface of the forewing and the shape of the lobe at the base of the valva in the male genitalia.

**Etymology.** The generic name is derived from the Latin *accinctus* meaning "well-equipped," and from the Latin *pubes* (feminine) meaning "private parts," in an anthropomorphic sense to its two unique autapomorphies, a bulbous frenulum in the male and some trifurcate setae on the female ovipositor.

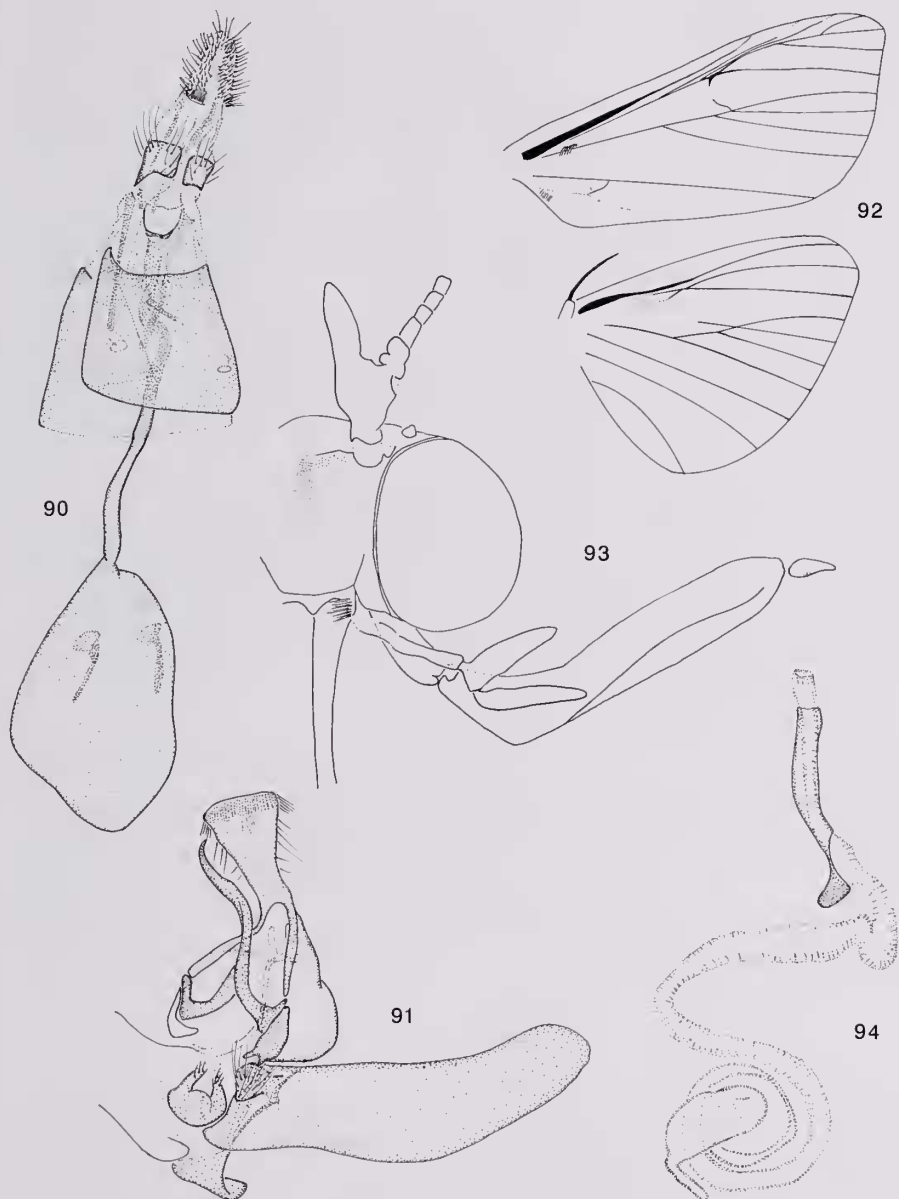
### **Mediavia**, new genus

Figs. 90-94, 132

**Diagnosis.** *Mediavia* has two unique autapomorphies: the origin of R<sub>2</sub> distal to the discocellular cell (Fig. 92), and the presence of a lobe at the base of valva adjacent to the costa extending midventrally to the juxta (Fig. 91). Two homoplasies also diagnose this genus: a medial lobe is absent at the base of the valva, as in *Roeseliodes*, *Tallula*, *Phidotricha*, and *Tancoa* and the outgroup *Macalla*; and an uncus wider at the caudal end than the midpoint, also occurring in *Cecidipta*, *Pococera*, *Bibasilaris*, and *Lacalma*.

**Identification synopsis.** *Mediavia* can be identified by the forewing pattern (Fig. 132) with the postmedial line curving toward the costa of the wing above CuA<sub>1</sub> and below CuA<sub>1</sub> extending to base of wing.

The sister group of *Mediavia* is *Deuterollyta*, and externally they can be distinguished by the shape of the postmedial line in the forewing. In *Deuterollyta* the postmedial line above R<sub>5</sub> shifts abruptly toward the base of the wing and in *Mediavia*



Figs. 90–94. *Medivavia discalis* (Hampson). 90. Female genitalia #230 MAS. 91. Male genitalia #890 MAS. 92. Wings #890 MAS. 93. Male head #890 MAS. 94. Aedeagus #890 MAS.

it curves toward the costa of the wing above  $CuA_1$ . *Deuterollyta* has  $CuP$  present in the forewing but it is absent in *Mediavia*. A frenulum hook is present in *Deuterollyta* but absent in *Mediavia*.  $Sc+R_1$  and  $R_s$  in the hindwing are fused in *Deuterollyta* but separate in *Mediavia*. The uncus at the caudal end is as wide as the width at midpoint in *Deuterollyta*, but in *Mediavia* the caudal end is wider than the width at the midpoint. The medial lobe at the base of the valva is absent in *Deuterollyta* but present in *Mediavia*.

**Description.** Male head (Fig. 93): Scape extension longer than base of pedicel; second segment of labial palpus concave; third segment of maxillary palpus at base of second segment. Wing (Fig. 92): Retinaculum a group of hooked setae below  $Cu$ . Forewing with  $CuP$  absent; 3A intersecting with 1A + 2A. Hindwing with  $Sc+R_1$  and  $R_s$  separate. Male genitalia (Fig. 91): Juxta with small median lobe; juxtal arms not reaching costa of valva; tegumen sclerite not reaching midventral position, tip narrower than base; base of uncus with U-shaped sclerotized structure. Female genitalia (Fig. 90): Lamella antevaginalis fold not bilobed or weakly bilobed; two signa present.

**Type species.** *Jocara discalis* Hampson, 1906, Ann. Mag. Nat. Hist. (7) 17: 133. Type locality. St. Jean Maroni, French Guiana (BMNH).

**Species examined.** *aciusa* (Schaus), *bevnoa* (Schaus), *discalis* (Hampson), *dissimilis* (Warren), *eadberti* (Schaus), *glaucoinalis* (Hampson), *grenvilalis* (Schaus), *hermengilda* (Schaus), *internigralis* (Dognin), *longistriga* (Schaus), *phaebadia* (Schaus), *soteris* (Schaus), *vimina* (Schaus), *zenoa* (Schaus).

**Distribution.** Northeastern Mexico south to Curitiba, Brazil. Apparently not present in the Caribbean.

**Biology.** No information available.

**Remarks.** The species included in *Mediavia* were previously placed primarily in *Stericta* and *Jocara*.

*Mediavia* has 18 species (see Nomenclatural Summary). The species can be distinguished by prominent scale color and pattern, variation of the shape of the lobe adjacent to the costa at the base of the valva, and the length of the extension of the scape.

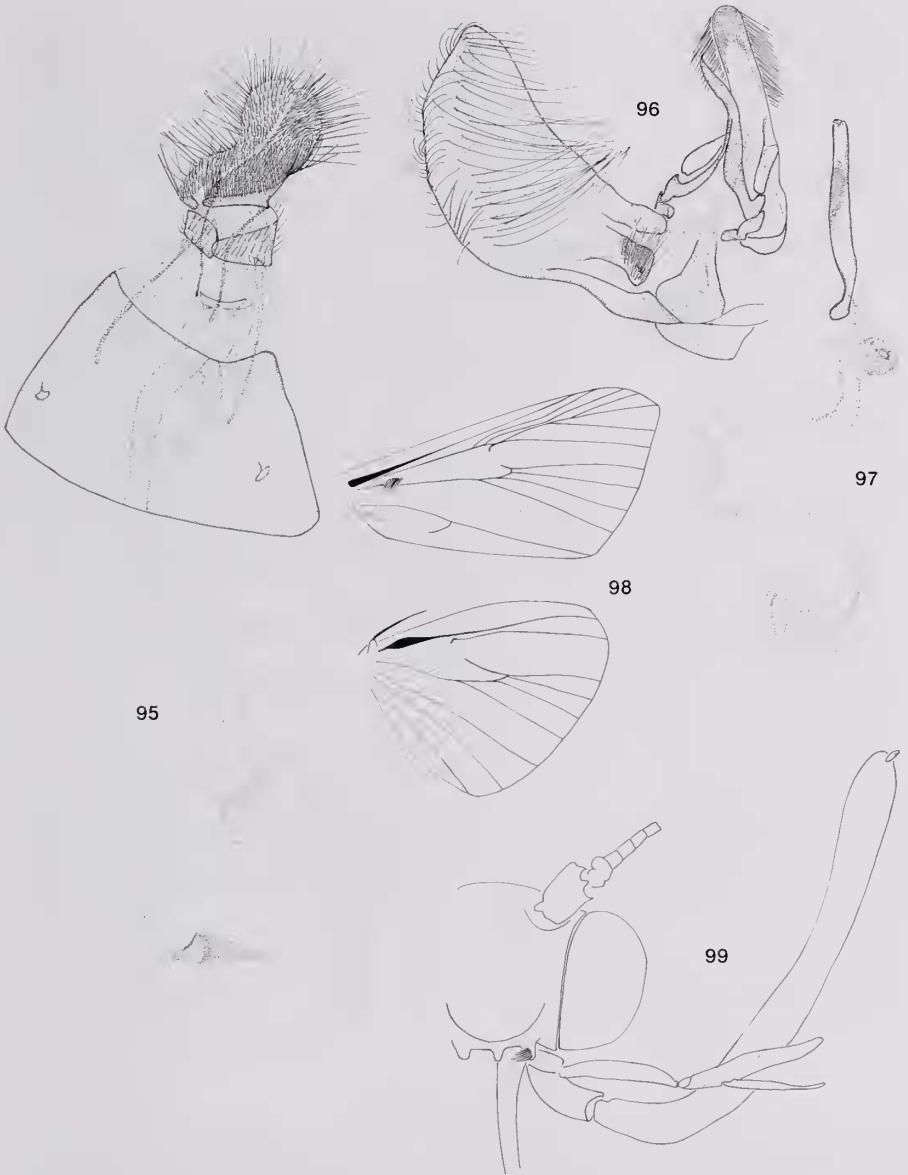
**Etymology.** This genus name is derived from the Latin *media via* meaning "middle of the road" in reference to one of its autapomorphies, a lobe extending medially toward the juxta.

### **Quadraforma**, new genus

Figs. 95–99, 133

**Diagnosis.** *Quadraforma* has one autapomorphy, a long and square-shaped medial lobe at the base of valva (Fig. 96). It is also distinguished by two homoplasious characters, a tubular second segment of the labial palpus, also occurring in *Bibasilaris*, *Dasyvesica*, *Mazdacis*, *Milgithea*, *Pococera*, *Tancoa*, *Cacozelia*, and *Lacalma*, and the tip of tegumen sclerite as broad as base, as in *Phidotricha* and *Pococera*.

**Identification synopsis.** *Quadraforma* can be identified by a forewing pattern (Fig. 133) with the basal band usually present in males. The medial line bifurcates just below the reniform spot, one line extending to the posterior margin and the other to base of the postmedial line. The reniform spot is a small line.



Figs. 95–99. *Quadraforma obliqualis* (Hampson). 95. Female genitalia #892 MAS. 96. Male genitalia #891 MAS. 97. Aedeagus #891 MAS. 98. Wings #891 MAS. 99. Male head #891 MAS.

*Chloropaschia* is the sister group of *Quadraforma*. Externally, species of *Chloropaschia* and *Quadraforma* can be distinguished by a medial line that curves basally in *Chloropaschia*, whereas the medial line bifurcates, one line extending to the posterior margin and the other to the base of the postmedial line in *Quadraforma*. *Chloropaschia* has a simple second segment of the labial palpus and *Quadraforma* has a tubular second segment of the labial palpus. In *Chloropaschia* the third segment of the maxillary palpus arises at the apex of the second segment, but in *Quadraforma* it arises at the base of the second segment. In *Chloropaschia* Sc+R<sub>1</sub> and Rs of the hindwing are fused, and in *Quadraforma* they are separate. *Quadraforma* lacks the sclerotized pattern on the eighth abdominal sternum that is present in *Chloropaschia*.

**Description.** Male head (Fig. 95): Extension of scape not extending beyond base of pedicel; second segment of labial palpus tubular; third segment of maxillary palpus arising from base of second segment. Wing (Fig. 96): Retinaculum a group of hooked setae just below Cu. Forewing with CuP absent; 3A intersecting with 1A + 2A. Hindwing with Sc+R<sub>1</sub> and Rs separate. Male genitalia (Fig. 96): Juxta with small medial lobe; juxtal arms extended to a point perpendicular to costa of valva; tegumen sclerite not reaching midventral position, tip as broad as base; uncus base with U-shaped sclerotized support; vesica without cornuti. Female genitalia (Fig. 95): Fold of lamella antevaginalis strongly bilobed; two signa present.

**Type species.** *Stericta obliqualis* Hampson, 1906, Ann. Mag. Nat. Hist. (7) 17:145. Type locality. Yungas-la-Paz, Bolivia (BMNH).

**Species examined.** *maroniensis* (Hampson), *mianalis* (Felder & Rogenhofer), *obliqualis* (Hampson), *seminigralis* (Hampson).

**Distribution.** Sinaloa. Mexico to southern Brazil. Apparently not present in the Caribbean.

**Biology.** No information available.

**Remarks.** Most of the species in *Quadraforma* were previously placed in the Old World genus *Stericta*.

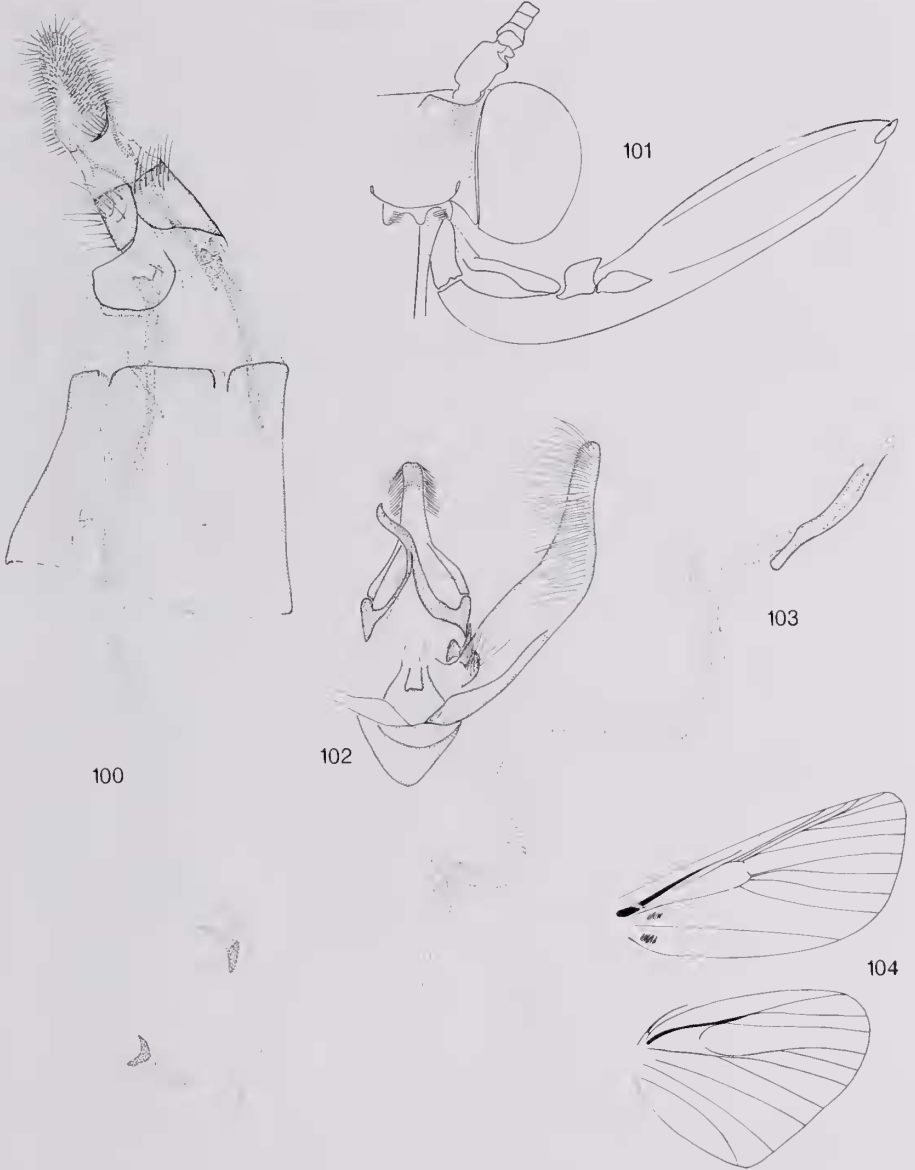
*Quadraforma* has four species (see Nomenclatural Summary) that can be distinguished by scale color and size. *Quadraforma obliqualis* exhibits much variation externally and in the labial and maxillary palpi, and may be a complex of sibling species.

**Etymology.** The genus name is derived from the Latin *quadra* meaning "square" and the Latin *forma* (feminine) meaning "shape" referring to the square-shaped lobe at the base of the valva.

#### Mazdacis, new genus

Figs. 100–104, 134

**Diagnosis.** *Mazdacis* has one autapomorphy, the lateral ridges on the frons extended medially to base of the clypeus (Fig. 101). The genus is also diagnosed by a combination of homoplasious characters: the third segment of the maxillary palpus arising at the midpoint of the second segment, as in *Tancoa*, the second segment of the labial palpus tubular, as in *Dasyvesica*, *Quadraforma*, *Cacozelia*, *Tancoa*, *Pococera*, *Milgithea* and *Lacalma*; a frenulum hook present, as in *Milgithea*, *Deuterollyta*, *Bibasilaris*, *Accinctapubes*, *Anarnatula*, *Toripalpus* and *Macalla*; the discocellular cell



Figs. 100–104. *Mazdacis consimilis* (Dognin). 100. Female genitalia #450 MAS. 101. Male head #449 MAS. 102. Male genitalia #449 MAS. 103. Aedeagus #450 MAS. 104. Wings #449 MAS.

half the forewing length or less, as in *Pococera*; and the tip of tegumen sclerite broader than the base, as in *Cecidipta*.

**Identification synopsis.** *Mazdacis* can be identified by a sheen to the entire body particularly the wings and a forewing pattern (Fig. 134) with the postmedial line extending toward the outer margin to  $M_2$  and  $M_3$  and then extending toward the base of the wing until  $CuA_2$  where the line extends toward the posterior margin. A band extends from the medial line at  $CuP$  to the base of wing. The reniform spot is faint and curved.

*Mazdacis* is the sister group to the *Chloropaschia*, *Quadraforma* clade. *Mazdacis* can be distinguished from *Chloropaschia* by the second segment of the labial palpus that is simple in *Chloropaschia*, but tubular in *Mazdacis*. The third segment of the maxillary palpus arises slightly below the apex of the second segment in *Chloropaschia*, but is at the midpoint of the second segment in *Mazdacis*. The frenulum hook is absent in *Chloropaschia*, but present in *Mazdacis*. The discocellular cell is more than half as long as the length of the forewing in *Chloropaschia*, but half as long or less than the forewing length in *Mazdacis*.  $CuP$  of the forewing is absent in *Mazdacis*, but present in *Chloropaschia*. In the hindwing,  $Sc+R_1$  and  $R_s$  are fused at one point in *Chloropaschia*, but separate in *Mazdacis*. The tip of the tegumen sclerite is narrower than the base in *Chloropaschia*, but broader than the base in *Mazdacis*. In *Chloropaschia* the ventral fold of the lamella antevaginalis is strongly bilobed, but in *Mazdacis* it is equal in width or weakly bilobed.

**Description.** Male head (Fig. 101): Scape extension not longer than base of pedicel; second segment of labial palpus tubular; third segment of maxillary palpus arising at midpoint of second segment. Wing (Fig. 104): Retinaculum a frenulum hook. Forewing with  $CuP$  absent; 3A intersecting with  $1A + 2A$ . Hindwing with  $Sc+R_1$  and  $R_s$  coincident. Male genitalia (Fig. 102): Juxta with small median lobe; juxtal arms reaching costa of valva; median lobe on valva a short, round nub; tegumen sclerite not reaching midventral position, tip broader than base; uncus base with U-shaped sclerotized structure; vesica without cornuti. Female genitalia (Fig. 100): Fold of lamella antevaginalis not bilobed or weakly bilobed; two signa present.

**Type species.** *Epipaschia consimilis* Dognin, 1911, Het. Nouv. L'amer. Sud, Fasc. III: 64. Type locality. St. Laurent du Maroni, French Guiana (USNM).

**Species examined.** *flavomarginata* (Druce), *consimilis* (Dognin), *zenoa* (Schaus).

**Distribution.** Central Brazil to French Guiana and Guyana then west to Peru.

**Biology.** No information available.

**Remarks.** The species presently included in this genus were previously in several genera. *Mazdacis* has three species (see Nomenclatural Summary). They differ in the shape of the male valva, the modification of the maxillary palpi, and the size of the ridge on the head of the male.

**Etymology.** The generic name is derived from the Persian Mazda, "god of light" referring to the shiny surface of the adult moths.

#### CLADISTIC ANALYSIS

*Monophyly of the Pococera complex.* After the survey of the genera of the Epipaschiinae, the *Pococera* complex was found to be monophyletic based on two synapomorphies, the presence of a saccus in the male genitalia and the distinctly narrowed



ductus bursae in the female genitalia. The saccus is elongate, bulbous and curved up toward the coecum of the aedeagus and this condition is unique in the Pyralidae, but occurs in the Crambidae (B. Landry, pers. comm.) and in other lepidopteran groups. The entire vinculum may curve up toward the base of the aedeagus in other epipaschiines and pyralids, but in those groups it is not an evagination of the saccus. The term "saccus" is commonly used to describe the anteromesial point of the vinculum, but in the epipaschiines the saccus is also an evagination. In the female genitalia the ductus bursae near the ostium bursae is always less than half as wide as the posterior margin of the seventh segment, in contrast to a ductus that is at least half as wide as the posterior margin of the seventh segment as occurs in other epipaschiines (including *Lacalma* and *Macalla*), other Pyralidae (especially the epipaschiine sister group Phycitinae) and some Crambidae. The narrow ductus bursae does occur in some pyralines and crambids. The distribution of this character in the crambids is not well known.

*Re-examination of the genera and delimitation of the terminal taxa.* To develop generic concepts, synapomorphies (unique states that do not occur in the outgroups) were sought to define the smallest groups of species. Tentative generic concepts based on the synapomorphies of species groups were tested with additional dissection of species and preliminary cladistic analyses. Groups of species that did not have synapomorphies were consolidated with near relatives. The results of this analysis formed the basis of the re-classification of the genera of the *Pococera* complex as described in the Taxonomic Synopsis discussion following the phylogenetic analysis.

Previous concepts of the importance of some characters over others were not taken into consideration. Characters such as wing pattern, color, and wing venation, upon which the old generic concepts were based, were not utilized during the development of new generic concepts. Wing pattern and color were not used as characters for this cladistic analysis (Solis, 1991), and previous concepts of wing venation were for the most part found to be unreliable (Janse, 1931, and in reference to Hampson, 1896). Many of the smaller genera that were externally distinctive, such as *Anarnatula*, were supported by this analysis. The larger genera (e.g., *Jocara* and *Stericta*) usually consisted of unnatural groups of species. These genera formerly included many species now placed in a wide variety of other genera (see original combinations, Nomenclatural Summary). In the case of *Stericta*, the type species, *divitalis* Guenée from Indo-Australia, was dissected and found not to belong to the *Pococera* complex.

The Nomenclatural Summary lists genera and species that are only provisionally placed in the *Pococera* complex. Most of the species listed were not dissected to verify their placement due to time and other constraints, such as inaccessibility of types. Many species appear, after perusal of external characters, to be synonyms of other species. Some genera and associated species that were not included in the analysis for a number of reasons are included in the Nomenclatural Summary under *Incertae sedis*. For example, the description of the genus *Jocara* was based on one female from the Dominican Republic. Only one other specimen, another female, from Haiti was located. The type specimens of *Anaeglis* and *Homura* described by Lederer could not be located at their expected repositories in Berlin and Vienna.

*Outgroups.* Historically, epipaschiines have been hypothesized to be closely related either to the pyralines or phycitines. The preliminary phylogenetic analysis of the Pyralidae (Solis and Mitter, 1992) placed the Epipaschiinae as sister group to the

Phycitinae. But the Phycitinae are a highly derived group and correlation of characters for the purpose of polarization was difficult. In preliminary analyses the pyraline genus *Herculia* was used as an outgroup, but it too was divergent enough that the characters of the *Pococera* complex could not be polarized. Therefore *Macalla* (*sensu stricto*), a genus in the Epipaschiinae but outside the *Pococera* complex, was chosen as the outgroup. *Macalla* was used because extensive material was available and because it had been studied in-depth at the species level (Howard and Solis, 1989). *Macalla* (*sensu lato*) is historically a "waste basket," and a survey of some species in *Macalla* outside the Western Hemisphere showed that it is not monophyletic. For the purpose of this study *Macalla* is restricted to *noctuipalpus* Dognin, *thyrsisalis* Walker, *arctata* Druce, and *hyalinalis* Amsel. This group of species share a juxta that is almost completely bifurcate and highly sclerotized (Fig. 107) and includes the type species, *Macalla thyrsisalis* Walker, from Honduras.

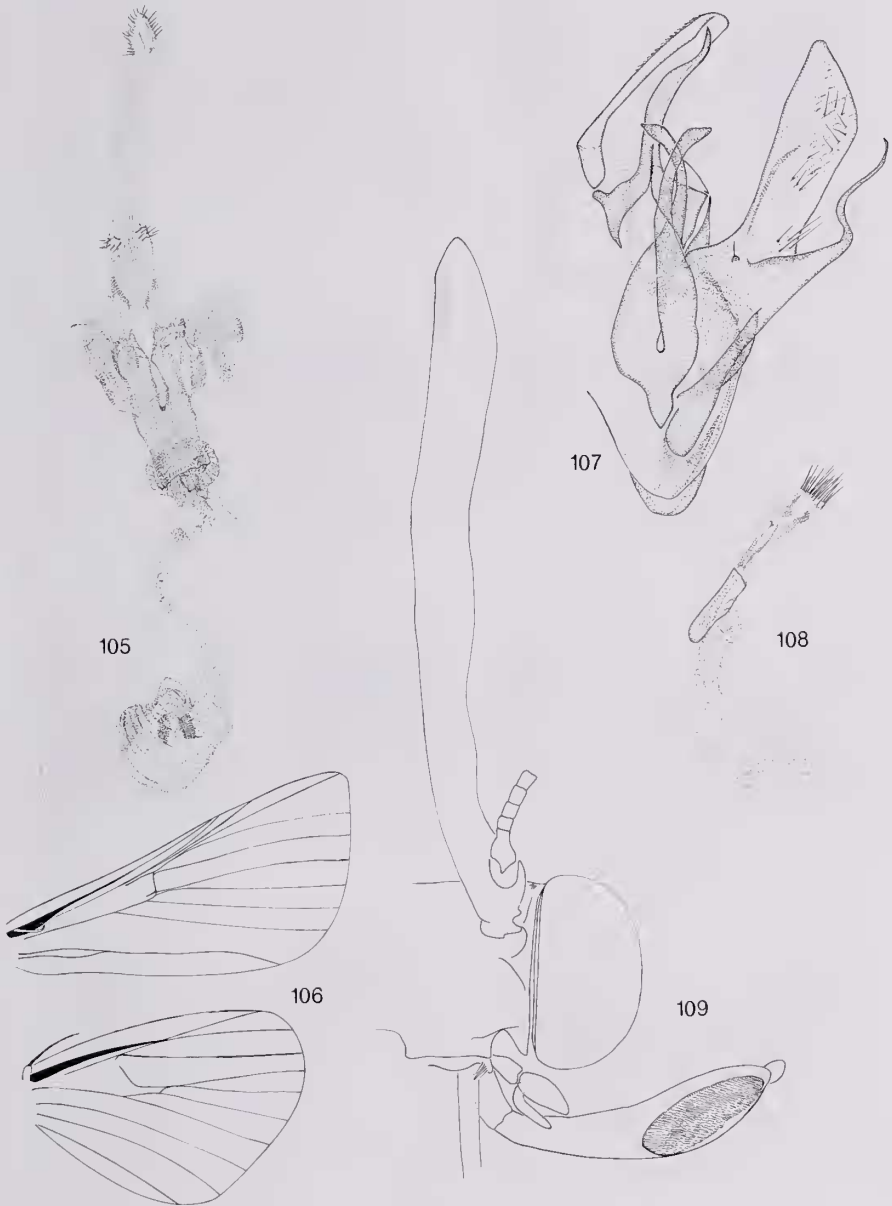
However, *Macalla* was also suspected of being a highly derived group based on the worldwide survey of the genera of the Epipaschiinae. *Lacalma*, a well-defined genus, was then added to the analysis because the survey and studies at the species level indicated a closer affinity to the ground plan of the *Pococera* complex than *Macalla*. Janse (1931) included four species in *Lacalma*. The genus is Indo-Australian in distribution and defined by an expanded vinculum with coremata (Fig. 111) in the male genitalia (Janse, 1931).

The exact relationship of *Macalla* and *Lacalma* to each other and to the group being revised was not investigated, since this would require a revision of the entire subfamily on a world basis. There is some evidence that *Macalla* is more basal to the epipaschiines than *Lacalma*. *Macalla* lacks a tegumen "sclerite" as in other subfamilies which puts forth the possibility that *Macalla* may be basal to all epipaschiines including the *Pococera* complex. Also, the signum in *Macalla* is scobinate and flat as in most phycitines, the sister group to the epipaschiines. The signa in the phycitines are variable but are never scobinate and spinelike as in the *Pococera* complex.

*Characters.* For the cladistic analysis of the *Pococera* complex 24 terminal taxa and 65 characters were used to develop a character matrix (Table 1). The characters were discussed in the Morphology section and are listed in the Morphology section.

In the following discussion and Figure 137, "autapomorphy" means a transformation to a derived condition only in a terminal taxon. At the interior nodes, a transformation to a derived condition occurring only once on the tree is termed a strong or unique synapomorphy. A "reversal" denotes a transformation to a plesiomorphic condition occurring only once on the tree. A "parallelism" denotes a synapomorphy of multiple origin or a multiple reversion to a primitive state either at a terminal taxon or a node.

*Stability tests.* Homoplasy (parallelisms, convergences, reversals), coupled with incomplete sampling of taxa, introduces error into tree estimation. A variety of approaches have been suggested for empirically gauging the stability or robustness of phylogeny estimates (Farris, 1969; Mickevich, 1978; Felsenstein, 1985; Lanyon, 1985). These involve sub- or re-sampling (or re-weighting) of either the taxa or the characters. The trees produced by the Wagner analysis of the *Pococera* complex were subjected to two such kinds of tests, successive weighting and sequential removal of



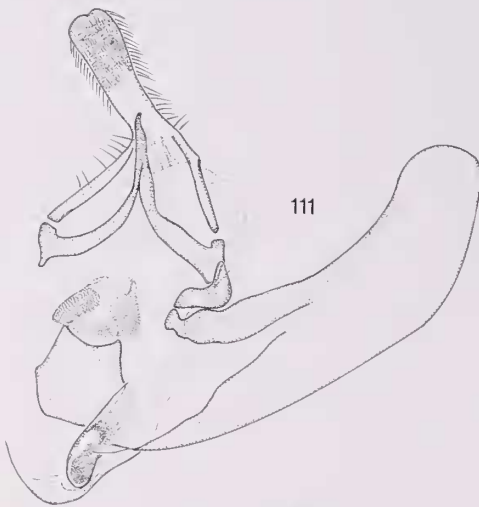
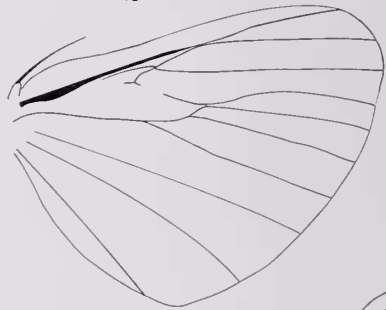
Figs. 105–109. *Macalla thyrsalis* Walker. 105. Female genitalia #757 MAS. 106. Wings #151 MAS. 107. Male genitalia #756 MAS. 108. Aedeagus #756 MAS. 109. Male head #151 MAS.



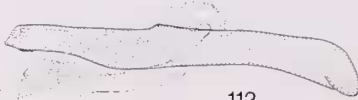
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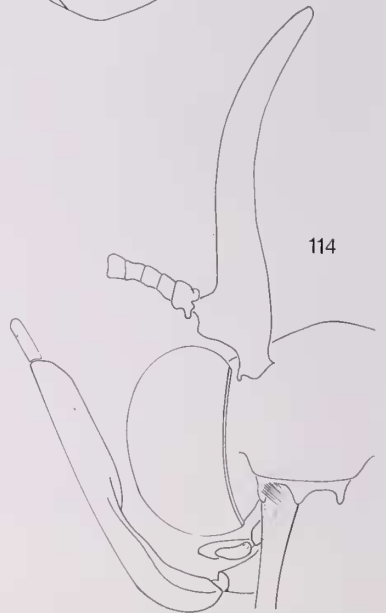
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Figs. 110–114. *Lacalma* n. sp. 110. Female genitalia #316 MAS. 111. Male genitalia #315 MAS. 112. Aedeagus #315 MAS. 113. Wings #315 MAS. 114. Male head #315 MAS.



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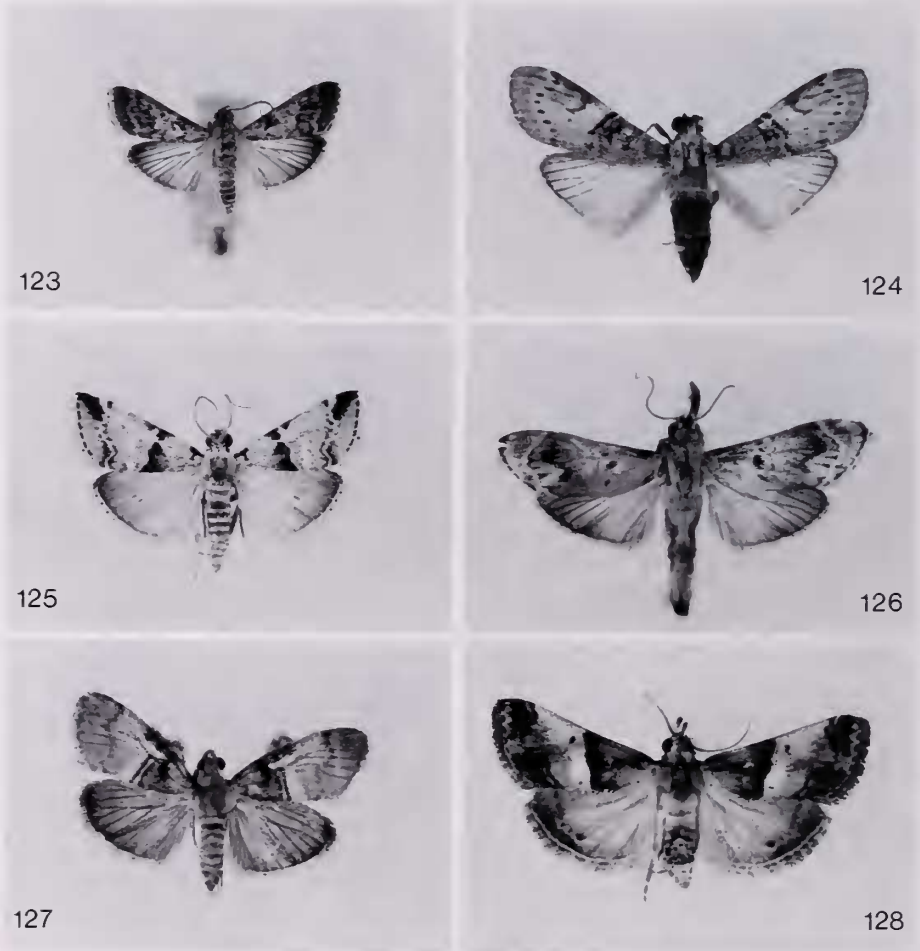


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Figs. 115–122. 115. *Anarnatula sylea* (Druce), Wing length = 7 mm. 116. *Cacozelia basi-ochrealis* Grote, Wing length = 9 mm. 117. *Carthara albicosta* Walker, Wing length = 15 mm. 118. *Cecidipta excoecariae* Berg, Wing length = 17 mm. 119. *Chloropaschia thermalis* Hampson, Wing length = 10 mm. 120. *Deuterollyta conspicualis* Lederer, Wing length = 11 mm. 121. *Milgitha melanoleuca* (Hampson), Wing length = 8 mm. 122. *Oneida lunulalis* Hulst, Wing length = 10 mm.



Figs. 123–128. 123. *Phidotricha erigena* Ragonot, Wing length = 5 mm. 124. *Roeseliodes ochreosticta* Warren, Wing length = 11 mm. 125. *Tallula atrifascialis* Hulst, Wing length = 7 mm. 126. *Tancoa calitas* Druce, Wing length = 9 mm. 127. *Pococera militella* Zeller, Wing length = 10 mm. 128. *Toripalpus breviornatalis* Grote, Wing length = 10 mm.

taxa. Successive weighting (Farris, 1969) was applied to the data set to test the effect of homoplasy. It is an iterative, *a posteriori* procedure in which characters are weighted by their consistencies on each succeeding tree estimate until the tree does not change. This procedure should result in the emphasis of the best and most consistent set of characters (Farris, 1983; Carpenter, 1988), those that “fit a common branching pattern” (Farris, 1969). If the topology of the tree following successive weighting is different from the initial estimated tree, then the highly homoplasious characters may be introducing error into the analysis, decreasing confidence in the estimated tree.

As a second check on the stability of the tree, selected taxa basal to large clades,



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Figs. 129–135. 129. *Pandoflabella olivescens* (Schaus), Wing length = 10 mm. 130. *Bibalilaris trisulcata* (Warren), Wing length = 14 mm. 131. *Accinctapubes albifasciata* (Druce), Wing length = 12 mm. 132. *Mediavia discalis* (Hampson), Wing length = 9 mm. 133. *Quadraforma obliqualis* (Hampson), Wing length = 10 mm. 134. *Mazdacis consimilis* (Dognin), Wing length = 8 mm. 135. *Dasyvesica lophotalis* (Hampson), Wing length = 10 mm.

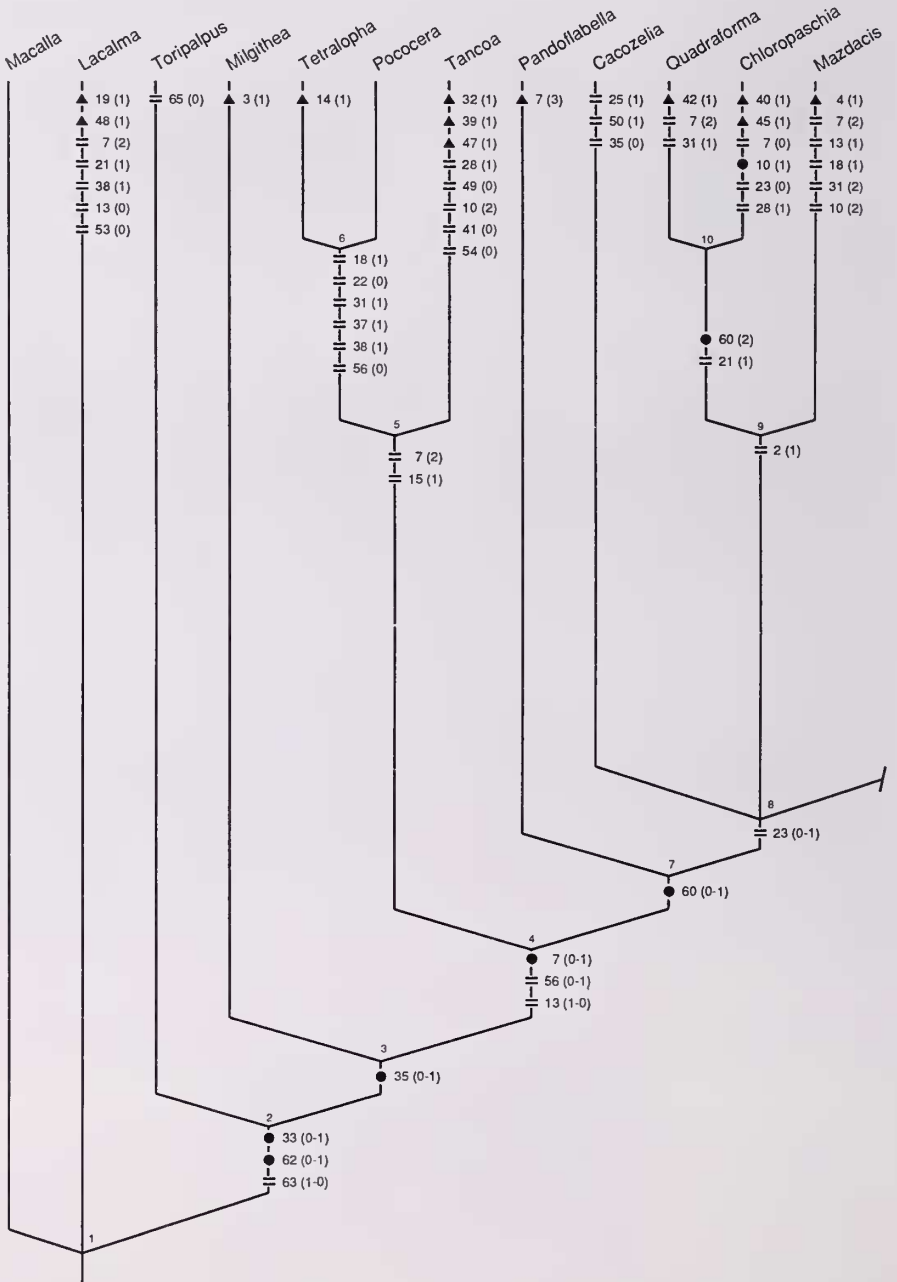
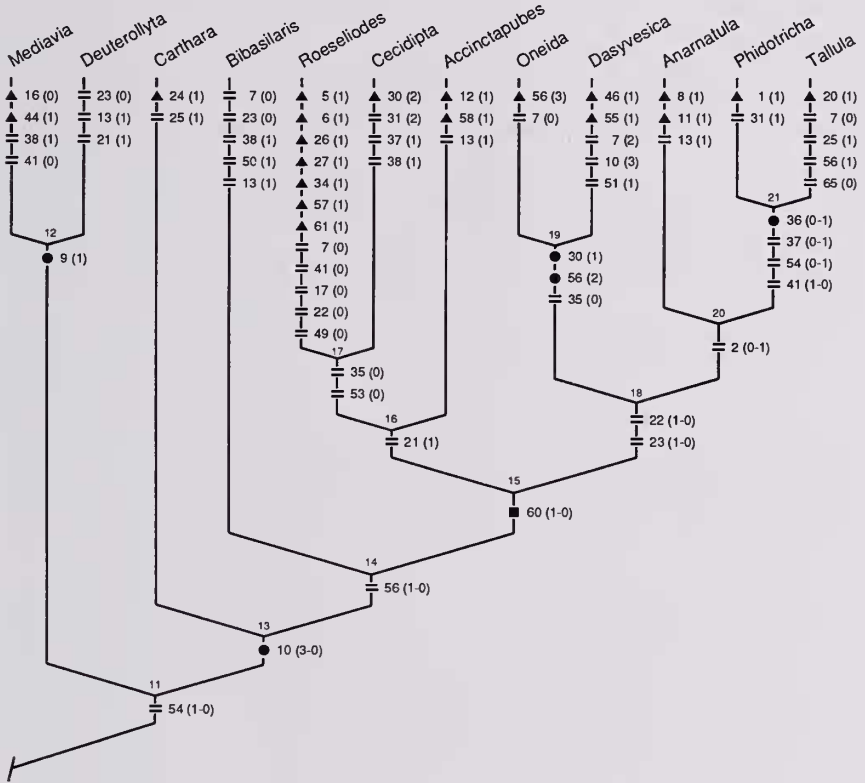


Fig. 136. One of three most equally parsimonious cladograms for the *Pococera* complex with *Macalla* and *Lacalma* as outgroups generated with the PHYSYS program. Numbers outside parentheses indicate character number, and those inside the parentheses indicate transformation states. All numbers correspond to those in the Summary of Character and States.





- ▲ autapomorphy
- synapomorphy
- ≡ parallelism
- reversal

Fig. 136. Continued.

especially clades defined only by homoplasious character(s), were removed one at a time from the data. The rationale is that, if the tree is being strongly influenced by homoplasious characters, changes in character distribution due to taxon sampling should strongly affect the estimate (Lanyon, 1985). The taxa removed were *Milgitha*, *Cacozelia*, *Pandoflabella*, *Bibasilaris*, *Accinctapubes*, *Toripalpus* and *Carthara*. Also, to test the effect of different outgroups, *Macalla* and *Lacalma* were removed sepa-

rately. This exercise allows the comparison of the stability of subsets within the *Pococera* complex when different outgroups are used. Subsets of taxa that remain the same after the removal of taxa are more stable than those that change.

*Results.* The phylogenetic analysis confirmed that there was considerable homoplasy in the data, but only three equally parsimonious trees were generated, of length 144 and consistency index 0.52. The disagreement among the three trees was the placement of two taxa, *Bibasilaris* and *Accinctapubes* (compare Figs. 137, 138). One tree was chosen for the purpose of discussion (Fig. 136). Successive weighting produced two trees with the same general topology as the tree chosen for discussion. Changes in the topology of the trees is discussed at the node in question. In the following discussion the characters are indicated by numbers in parentheses.

The analyses generally supported the monophyly of the *Pococera* complex. That is, the two outgroups, *Lacalma* and *Macalla*, came out together whenever they were both included (Farris, 1972), except when *Carthara* was removed. Removal of *Carthara*, with the tree rooted at *Macalla*, placed *Lacalma* inside the complex as a member of a clade including the *Pococera* clade (*Tetralopha* + *Pococera* + *Tancoa*) and the *Oneida* clade (*Oneida* + *Dasyvesica*) just above *Milgithea* and *Toripalpus* at the base of the tree. It seems unlikely that *Lacalma* lies inside the *Pococera* complex, since *Lacalma* lacks the two key synapomorphies of a prominent saccus and the narrow ductus bursae that diagnose the *Pococera* complex. This instability is attributable instead to the absence in the analysis of additional outgroups close to *Lacalma*.

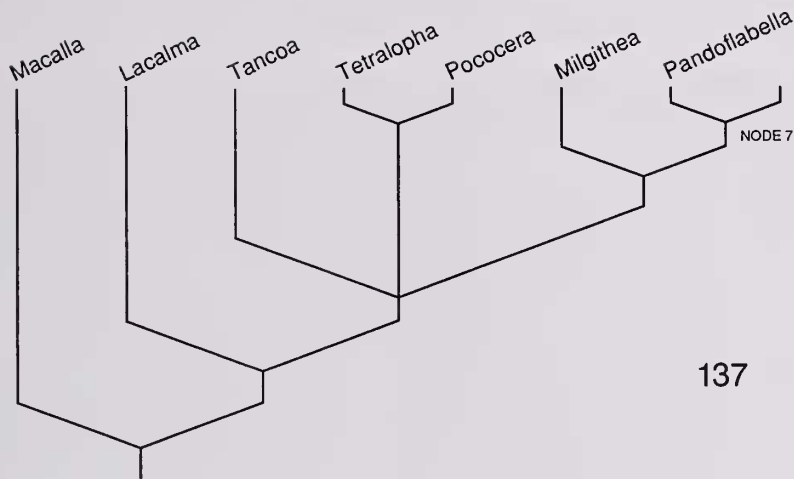
The estimate of the position of the root is somewhat unstable since the arrangement of the apparently basal elements, e.g., the *Pococera* clade, *Milgithea*, and *Toripalpus*, differs when only *Lacalma* is used as the outgroup or when *Toripalpus* is removed. In the analyses, node 3 and node 5 in effect exchange positions (Figs. 136, 139). This results from conflicting distributions of several character states in *Macalla*, and *Lacalma* and *Toripalpus*. The characters in question are the presence or absence of a frenulum hook and of a lobe at the base of the valva, and the width of the caudal end of the uncus. These characters are highly homoplasious on the tree. Nevertheless, the basal elements, the *Pococera* clade, *Milgithea*, and *Toripalpus*, are clearly identified.

Although the root is thus somewhat uncertain, many of the clades were maintained. All other manipulations did not destabilize the tree (Fig. 136) despite the fact that most groups are supported by very few characters. The only disagreement in almost all trees was the placement of *Bibasilaris* and *Accinctapubes*.

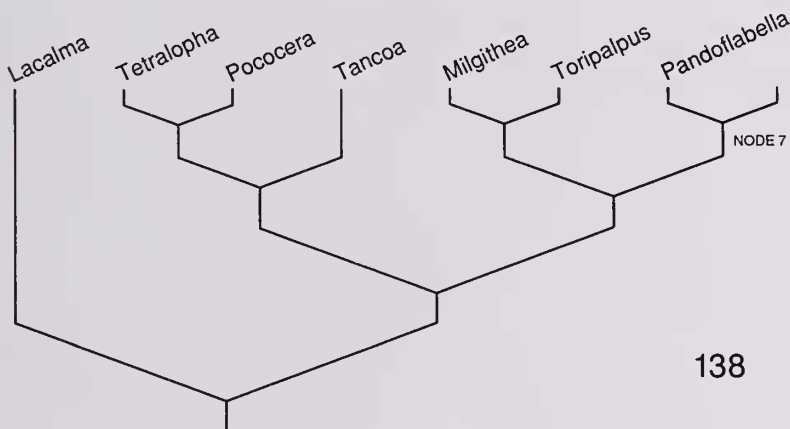
At node 3 *Milgithea* is the sister group to the remainder of the *Pococera* complex and is diagnosed by one homoplasious synapomorphy, the presence of the sclerotized structure at the base of the uncus (35). This state is lost several times in the remainder of the clade. The removal of *Milgithea* from the analysis did not destabilize the general topology of the tree.

Node 4 consists of the *Tancoa* + *Pococera* (*sensu lato*) clade and node 7. It is diagnosed by a unique synapomorphy and two homoplasious synapomorphies. The origin of a concave second labial segment (7) occurs only once on the tree. The two highly homoplasious states diagnosing this node are an absent frenulum hook (13) that re-appears in several taxa, and the presence of a long, pointed medial lobe in the juxta (56), which is subsequently lost and regained.

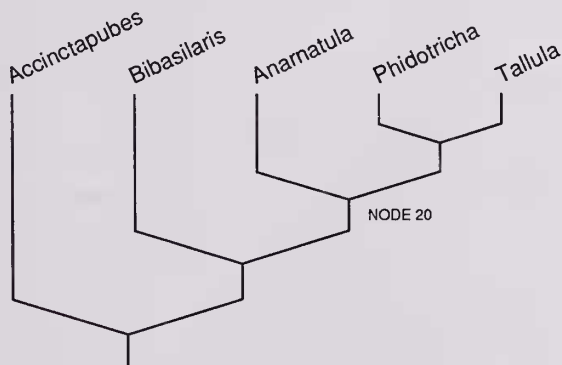
Node 5 is diagnosed by a unique combination of homoplasious characters. The



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Figs. 137–139. 137, 138. Alternate placement of *Bibasilaris* and *Accinctapubes* upon different manipulations. 139. Alternate placement of *Pococera* clade, *Milgiitea*, and *Toripalpus* upon successive weighting and sequential taxon removal.

second segment of the labial palpus is tubular (7), and  $R_1$  and  $R_2$  are fused in the forewing (15). The sister group relationship of *Pococera* and *Tetralopha* (node 6) is fairly well established. This group is diagnosed by a unique combination of six characters: a relatively short discocellular cell (18), a third anal vein (22) that is not coincident with the second anal vein, a tip of the tegumen sclerite as broad as the base (31), a single row of caudal setae on the uncus (37), a caudal end of the uncus wider than the width of the midpoint (38), and a juxta with a small, round medial lobe (56). *Pococera* was included to show that no synapomorphies were detected to define it. Therefore *Tetralopha* is synonymized under *Pococera* (see Morphology and Taxonomic Synopsis for further discussion).

Node 7 includes *Pandoflabella* as the basal taxon and is diagnosed by one unique synapomorphy in the female genitalia. The lamella antevaginalis (60) has a ventral fold that is entire or only weakly bilobed. The removal of this genus does not destabilize the topology of the tree.

Node 8 includes *Cacozelia*, node 9, and node 11, which form the only trichotomy in the tree. It is defined by a highly homoplasious separation of veins  $Sc+R_1$  and  $R_5$  of the hindwing (23). Removal of *Cacozelia* does not destabilize the tree topology.

Node 9 includes *Chloropaschia*, *Quadraforma*, and *Mazdacis* and is diagnosed by the homoplasious reduction of the scape (2). The modified scape is lost again at node 20. The sister group relationship of *Quadraforma* and *Chloropaschia* (node 10), is defended by a unique synapomorphy in the female genitalia. The lamella antevaginalis (60) has a ventral fold that is strongly bilobed. It is also diagnosed by the homoplasious presence of a first anal vein in the forewing (21) that is gained several times.

Node 11 includes *Mediavia* + *Deuterollyta*, and node 13. It is diagnosed by the homoplasious reduction of the juxta arms (54). In almost all manipulations, the sister group relationship of node 12 and node 13 was maintained. The sister group relationship of *Mediavia* and *Deuterollyta* is based on a single unique synapomorphy: the base of the first segment of the maxillary palpus is membranous and pleated (9).

Node 13 includes *Carthara* plus node 14 and is diagnosed by a unique synapomorphy. The third segment of the maxillary palpus (10) is at the apex of the second segment. Removal of *Carthara* affects the placement of the group *Oneida* + *Dasyvesica* and of *Lacalma* (as discussed earlier), but does not otherwise change the tree. The transformation of state 3, the third segment of the maxillary palpus arising at the base of the second segment, to state 0, the third segment of the maxillary palpus arising at the apex of the segment, occurs only once on the tree, but the character is multistate and homoplasious. Degeneration of the character to less than four states would result in loss of information since states 1 and 2 are unique to terminal taxa. Alternatively, the character could prove to be too homoplasious to provide any consistent information on phylogeny. For example, the sister group relationship of *Oneida* and *Dasyvesica* is well defended by other characters and yet the states for the placement of the third maxillary segment in the two genera are at the two extremes of this four state transformation series. Further resolution by study of the maxillary palpus in the Pyralidae may solve the polarity problem of this character.

Node 14 includes *Bibasilaris* and node 15 and is also diagnosed by a homoplasy. The medial lobe of the juxta (56) is small and round. This node is not well defended, but removal of *Bibasilaris* causes little destabilization. In most analyses *Bibasilaris* was placed either as the sister group to node 15 (Fig. 136) or node 20 (Fig. 139). The placement of this genus is not resolved.

Node 15 consists of node 16 and node 18 and is diagnosed by a reversal. The lamella antevaginalis of the female genitalia (60) lacks a ventral fold. Despite the homoplasious character state, the clade is fairly stable, because all manipulations resulted in the inclusion of the same terminal taxa.

Node 16 consists of *Roeseliodes*, *Cecidipta* and *Accinctapubes* and is diagnosed by a highly homoplasious synapomorphy, loss of the first anal vein of the forewing (21). While removal of *Accinctapubes* does not destabilize the remainder of the tree, the placement of *Accinctapubes* is not well resolved. *Accinctapubes* was also placed as the sister group to a clade including *Bibasilaris* and node 20 (Fig. 139) when either *Carthara*, *Toripalpus* or *Pandoflabella* were removed and when only *Lacalma* was used as the outgroup. The sister group relationship of *Roeseliodes* and *Cecidipta* (node 17) is defended by two homoplasious characters: loss of the sclerotized structure at the base of the uncus (35), which occurs several times in the tree, and the loss of juxtal arms (53), which occurs also in *Lacalma*.

Node 18 is diagnosed by two homoplasious characters. The third anal vein (22) is not coincident with the second anal vein in the forewing and in the hindwing  $Sc+R_1$  and  $Rs$  are fused (23). The relationship of node 19 and node 20 is not well defended. When *Toripalpus* is removed and *Lacalma* is used as an outgroup, node 19 is the sister group of node 17 and when *Carthara* is removed node 19 is placed in a clade at the base of the tree with the *Pococera* clade.

The sister group relationship of *Oneida* and *Dasyvesica* is well defended by two unique synapomorphies and one homoplasy. The tegumen sclerite (30) reaches a midventral position and the juxta (56) lacks lobes. The sclerotized structure at the base of the uncus (35) is lost several times on the tree.

Node 20, consisting of *Anarnatula*, *Phidotricha*, and *Tallula*, is defined by a parallelism, the loss of an elongate scape (2). Despite the parallelism, all manipulations resulted in the clustering of these three taxa.

The sister group relationship of *Phidotricha* and *Tallula* (node 21) is supported by a unique synapomorphy. The sclerotized structure at the base of the uncus (36) is triangular rather than U-shaped. Three homoplasies also diagnose this clade: the presence of a single caudal row of setae on the uncus (37), elongate juxtal arms (54) that extend to and beyond the costa of the valva, and the absence of a (41) medial lobe on the base of the valva.

*Discussion.* Two main problems are apparent with the results of the phylogenetic analysis. First, the relationships among the relatively primitive genera are unsettled, as exhibited by the instability on removal of some taxa, and the use of a different outgroup. Characters associated with these problems are highly homoplasious and warrant in-depth study across all taxa in the Epipaschiinae. Such a study would test the polarity and transformation series of the characters used in this study. The second problem, the placement of *Bibasilaris* and *Accinctapubes* is not resolved. Future placement of these genera may depend on discovery of additional characters.

Despite these problems, certain clades are stable, always clustering together despite the manipulation. This is evidenced by the general correspondence of the trees produced by the Wagner analysis and successive weighting. While there is much homoplasy, many characters on the trees are hierarchically correlated producing a stable tree. This estimated phylogeny will serve as a hypothesis to be tested further. Logically, two lines of systematic inquiry in the Epipaschiinae follow the present study. The genera of the *Pococera* complex should be revised at the species level. Second,

outgroups that have been studied in-depth at the species level should be added and used in cladistic analyses. Studies on the remaining genera outside the *Pococera* complex might resolve some of the questions about basal relationships and character evolution in the *Pococera* complex.

Inferences about biogeography based on this estimate of relationship of the *Pococera* complex are difficult primarily due to the overlap of distributions for almost all genera, and secondarily, to the lack of resolution at the species level and the paucity of collected material, hence a paucity of information on the entire range of the organisms.

Hypotheses of insect-plant relationships are speculative because of the paucity of corroborated information on host-plant associations in many of the genera. At first glance, the list of hosts utilized (Table 2) appears to be taxonomically disparate. But recent work has uncovered a host utilization pattern correlating many unrelated plant families which share a common defense syndrome: latex and resinous canals (Dussourd and Eisner, 1987; Farrell et al., 1991). Among the canal-bearing hosts in the *Pococera* complex are Sapotaceae, Fabaceae, Pinaceae, Anacardiaceae, Icacinaceae, Euphorbiaceae, and Moraceae. Departures from association with canal-bearing or resinous plants are species found on temperate plant groups and polyphages. For example, *Tancoa* is a specialist on canal-bearing plants and occurs from southern Mexico to Brazil and the occasionally polyphagous *Pococera* occurs from Brazil north to Canada. Some species of *Pococera* and *Phidotricha* appear to be oligophagous; in fact only one or two species are feeders on a wide variety of plant families. In *Pococera* many different species feed on resinous legumes, and one species feeds on Anacardiaceae, Fabaceae, Aceraceae, Ulmaceae, Fagaceae, Juglandaceae, and Carpinaceae. One species of *Tancoa* feeds on the laticiferous Icacinaceae, whereas the sister group of *Tancoa*, *Pococera*, has species feeding on resin-canal bearing Pinaceae or resinous legumes. If the ancestor of the two groups is hypothesized to feed on canal-bearing plants, this could have predated *Pococera* radiation into temperate areas. Genera associated with canal-bearing plants are *Milgitha*, *Pococera*, *Tancoa*, and *Cecidipta*. The first three genera, basal on the cladogram, could be hypothesized to be primitively associated with canal-bearing plants. A species of *Cecidipta* is associated with Euphorbiaceae and Moraceae, but few records exist between *Cecidipta* and the basal genera. As a result the association of *Cecidipta* with canal-bearing plants could be interpreted as being either plesiomorphic or a parallelism. Discovery of canal-bearing hosts for intermediary genera would support the hypothesis of plesiomorphy. The hypothesis of convergence seems less likely, *a priori*, because of certain complex behaviors generally associated with insects feeding on laticiferous plants (Dussourd and Eisner, 1987) that have been documented in *Cecidipta* and probably characterize cladistically basal genera likewise associated with canal-bearing plants. In at least one species of *Cecidipta*, eggs are laid on fly-induced galls on the stem and early instars feed on the gall. If there is not enough food in the gall for the development of the caterpillar, it exits the gall, severs leaf petioles, and returns to the gall with the leaves (Berg, 1877). The specialized behaviors allow the caterpillar to avoid latex defenses of the plant which it would no doubt encounter were it to feed directly on intact tissues. Similar behaviors have been documented for other lepidopteran associations with various laticiferous plants (Dussourd and Eisner, 1987). I expect that *Roeseliodes*, the highly derived sister group of *Cecidipta*, is probably also associated

with laticiferous plants and may exhibit specialized behaviors for countering latex defense.

Some of the similarities in host plant associations in the *Pococera* complex may be attributable to similarity in chemistry. Two distantly related plant families share benzylisoquinoline alkaloids, known to be toxic to most non-adapted herbivores (Miller and Feeny, 1983). Several genera (*Deuterollyta*, *Accinctapubes* and *Tallula*) have a majority of species known to feed on Lauraceae and Rutaceae. Thus, the apparent parallel associations with the families may reflect a common inherited ability to detoxify the noxious compounds.

#### NOMENCLATURAL SUMMARY

##### **Accinctapubes** Solis, new genus

*albifasciata* (Druce, 1902) (*Cecidiptera*), missp., N. COMB.

*leucoplagiialis* (Hampson, 1906) (*Stericta*), N. SYN.

*ban* (Dyar, 1916) (*Jocara*), N. SYN.

*anthimusalis* (Schaus, 1925) (*Stericta*), N. COMB.

*apicalis* (Schaus, 1906) (*Jocara*), N. COMB.

*elphegealis* (Schaus, 1934) (*Cecidiptera*), N. SYN.

*chionopheralis* (Hampson, 1906) (*Stericta*), N. COMB.

##### *Anarnatula* Dyar, 1918

*subflavida* Dyar, 1918

*sylea* (Druce, 1899) (*Pycnulia*)

*hyporhoda* Dyar, 1918

##### **Bibasilaris** Solis, new genus

*erythea* (Druce, 1900) (*Homura*), N. COMB.

*paranensis* (Schaus, 1906) (*Macalla*)

*ineldolis* (Schaus, 1934) (*Macalla*), N. SYN.

*trisulcata* (Warren, 1891) (*Homura*), N. COMB.

*viriditincta* (Schaus, 1912) (*Locastra*)

##### *Cacozelia* Grote, 1877

*albomedialis* (Barnes & Benjamin, 1924) (*Epipaschia*), N. COMB.

*pemphusalis* (Druce, 1899) (*Pococera*), N. SYN.

*basiochrealis* Grote, 1877

*elegans* (Schaus, 1912) (*Pococera*), N. COMB.

*neotropica* (Amsel, 1956) (*Tioga?*), N. SYN.

*interruptella* (Ragonot, 1888) (*Epipaschia*), N. COMB.

*dentilineella* (Hulst, 1900) (*Jocara*)

##### *Carthara* Walker, 1865

*Leptosphetta* Butler, 1878, N. SYN.

*Pycnulia* Zeller, 1881, N. SYN.

*abrupta* (Zeller, 1881) (*Pycnulia*), N. COMB.

*albicosta* Walker, 1865

*scopipes* (Felder & Rogenhofer, 1875) (*Idia*), N. SYN.

*rabdina* (Butler, 1878) (*Leptosphetta*), N. SYN.

*ministra* (Zeller, 1881) (*Pycnulia*), N. SYN.

##### *Cecidiptera* Berg, 1877

*Acecidiptera* Amsel, 1956, N. SYN.

- cecidiptoides* (Schaus, 1925) (*Stericta*), N. COMB.  
*excoecariae* Berg, 1877  
     *phyalis* (Druce, 1899) (*Locastra*)  
     *abnormalis* Dognin, 1904, N. SYN.  
     *albescens* (Schaus, 1906) (*Macalla*)  
     *olivencia* (Schaus, 1906) (*Jocara*), N. SYN.  
     *miosema* (Meyrick, 1936) (*Earoctenis*), N. SYN.  
*major* (Amsel, 1956) (*Acecidipta*), N. COMB.  
*teffealis* (Schaus, 1922) (*Stericta*), N. COMB.
- Chloropaschia* Hampson, 1906  
*adesia* Schaus, 1925  
*afflicta* (Schaus, 1922) (*Macalla*)  
*aniana* Schaus, 1925  
*brithvalda* Schaus, 1922  
*canities* Schaus, 1912  
*contortilinealis* (Dognin, 1908) (*Stericta*), N. COMB.  
     *rufilinea* (Druce, 1910) (*Macalla*)  
*epipodia* Schaus, 1925  
*fabianalis* Schaus, 1922  
*fiachnalis* Schaus, 1925  
*godrica* Schaus, 1934  
*granitalis* (Felder & Rogenhofer, 1875) (*Homura*?)  
*hemileuca* (Dognin, 1910) (*Stericta*), N. COMB.  
*hollandalis* Schaus, 1925  
*lascercianalis* Schaus, 1934  
*lativalva* (Amsel, 1956) (*Arnatula*?), N. COMB.  
*mennusalis* Schaus, 1922  
*nadena* Schaus, 1934  
*pegalis* (Schaus, 1922) (*Macalla*), N. COMB.  
*possidia* (Schaus, 1925) (*Stericta*), N. COMB.  
*rufibasis* (Druce, 1910) (*Macalla*), N. COMB.  
     *claphealis* (Schaus, 1912) (*Macalla*), N. SYN.  
     *brunnapex* (Kaye, 1922) (*Pococera*), N. SYN.  
*selecta* (Schaus, 1912) (*Macalla*), N. COMB.  
*thermalis* Hampson, 1906  
*venantia* Schaus, 1925
- Dasyvesica* Solis, 1991  
     *lophotalis* (Hampson, 1906) (*Jocara*)  
     *nepomuca* (Schaus, 1925) (*Pococera*)  
     *crinitalis* (Schaus, 1922) (*Jocara*)
- Deuterollyta* Lederer, 1863  
     *Winona* Hulst, 1888, N. SYN.  
     *Oedomia* Dognin, 1906, N. SYN.  
     *Ajocara* Schaus, 1925, N. SYN.  
     *Ajacania* Schaus, 1925, N. SYN.  
*abachuma* (Schaus, 1922) (*Jocara*), N. COMB.  
*acheola* (Schaus, 1925) (*Jocara*), N. COMB.



- aidana* (Schaus, 1922) (*Jocara*), N. COMB.  
*agathoa* (Schaus, 1922) (*Jocara*), N. COMB.  
*albiferalis* (Hampson, 1916) (*Jocara*), N. COMB.  
*albimedialis* (Hampson, 1916) (*Jocara*), N. COMB.  
*amazonalis* (Schaus, 1925) (*Jocara*), N. COMB.  
*anacita* (Schaus, 1925) (*Jocara*), N. COMB.  
*anastasia* (Schaus, 1922) (*Jocara*), N. COMB.  
*andeola* (Schaus, 1925) (*Jocara*), N. COMB.  
*ansberti* (Schaus, 1922) (*Jocara*), N. COMB.  
*anathasia* (Schaus, 1925) (*Jocara*), N. COMB.  
*basilata* (Schaus, 1912) (*Isolopha*), N. COMB.  
*bryoxantha* (Meyrick, 1936) (*Jocara*), N. COMB.  
*cacalis* (Felder & Rogenhofer, 1875) (*Hemimattia?*), N. COMB.  
*cantianilla* (Schaus, 1925) (*Jocara*), N. COMB.  
*chrysoderas* (Dyar, 1917) (*Pococera*), N. COMB.  
*chlorisalis* (Schaus, 1912) (*Jocara*), N. COMB.  
*claudalis* (Moeschler, 1866) (*Hemimattia*), N. COMB.  
*cononalis* (Schaus, 1922) (*Jocara*), N. COMB.  
*conrana* (Schaus, 1922) (*Jocara*), N. COMB.  
*conspicualis* Lederer, 1863  
    *medusa* (Druce, 1902) (*Stericta*), N. SYN.  
*cristalis* Felder & Rogenhofer, 1875  
*dapha* (Druce, 1895) (*Jocara*), N. COMB.  
*desideria* (Schaus, 1925) (*Jocara*), N. COMB.  
*extensa* (Walker, 1863) (*Nephoptyx*), N. COMB.  
    *variegata* Warren, 1891  
*francesca* Jones, 1912  
    *egvina* (Schaus, 1922) (*Tallula*), N. SYN.  
*fuscifusalis* (Hampson, 1916) (*Pococera*), N. COMB.  
    *theodota* (Schaus, 1925) (*Jocara*), N. SYN.  
*hemizonalis* (Hampson, 1916) (*Jocara*), N. COMB.  
*hispidata* (Dognin, 1906) (*Oedomia*), N. COMB.  
    *amazona* (Schaus, 1925) (*Ajocara*), N. SYN.  
*hospitia* (Schaus, 1925) (*Jocara*), N. COMB.  
*lactiferalis* (Hampson, 1916) (*Jocara*), N. COMB.  
*lutosalis* (Amsel, 1956) (*Jocara*), N. COMB.  
*majuscula* Herrich-Schaeffer, 1871  
    *incrustalis* (Hulst, 1887) (*Toripalpus*), N. SYN.  
    *infectalis* Moeschler, 1890  
    *ferrifusalis* (Hampson, 1906) (*Jocara*), N. SYN.  
    *obscuralis* (Schaus, 1912) (*Jocara*), N. SYN.  
    *perseella* (Barnes & McDunnough, 1913) (*Jocara*), REV. STAT.  
    *musettalis* (Schaus, 1934) (*Jocara*), N. SYN.  
*malrubia* (Schaus, 1934) (*Cecidipta*), N. COMB.  
*maroa* (Schaus, 1922) (*Jocara*), N. COMB.  
*martinia* (Schaus, 1922) (*Jocara*), N. COMB.  
*maurontia* (Schaus, 1925) (*Jocara*), N. COMB.

- mava* (Schaus, 1925) (*Jocara*), N. COMB.  
*mediosinialis* (Hampson, 1916) (*Pococera*), N. COMB.  
*monosemia* (Zeller, 1881) (*Myeloides*), N. COMB.  
*multicolor* (Dognin, 1904) (*Stericta*), N. COMB.  
*nigripuncta* (Schaus, 1912) (*Jocara*), N. COMB.  
*oduvalda* (Schaus, 1925) (*Jocara*), N. COMB.  
*oediperalis* (Hampson, 1906) (*Jocara*), N. COMB.  
*phileasalis* (Schaus, 1925) (*Ajocara*), N. SYN.  
*pagiroa* Schaus, 1906  
*prudentia* (Schaus, 1925) (*Jocara*), N. COMB.  
*pyropicta* (Schaus, 1934) (*Jocara*), N. COMB.  
*ragonoti* Moeschler, 1890  
*raymonda* (Schaus, 1922) (*Jocara*), N. COMB.  
*rufitinctalis* (Hampson, 1906) (*Tetralopha*), N. COMB.  
*sara* (Schaus, 1925) (*Jocara*), N. COMB.  
*sisinnia* (Schaus, 1925) (*Jocara*), N. COMB.  
*subcurvalis* (Schaus, 1912) (*Jocara*), N. COMB.  
*subfusca* (Schaus, 1912) (*Jocara*), N. COMB.  
*suisferens* (Dyar, 1913) (*Jocara*), N. COMB.  
*tenebrosa* (Schaus, 1912) (*Jocara*), N. COMB.  
*terrenalis* (Schaus, 1912) (*Jocara*), N. COMB.  
*thermochroalis* (Hampson, 1916) (*Jocara*), N. COMB.  
*translinea* (Schaus, 1912) (*Jocara*), N. COMB.  
*umbrosalis* (Schaus, 1912) (*Jocara*), N. COMB.  
*yva* (Schaus, 1925) (*Jocara*), N. COMB.  
*steinbachalis* (Schaus, 1925) (*Ajocania*), N. SYN.  
*zetila* (Druce, 1902) (*Stericta*), N. COMB.  
*luciana* (Schaus, 1922) (*Jocara*), N. SYN.

**Mazdacis** Solis, new genus

- consimilis* (Dognin, 1911) (*Epipaschia*), N. COMB.  
*flavomarginata* (Druce, 1902) (*Stericta*), N. COMB.  
*soteris* (Schaus, 1922) (*Auradisa*), N. SYN.  
*zenoa* (Schaus, 1925) (*Chloropaschia*), N. COMB.

**Mediavia** Solis, new genus

- aciusa* (Schaus, 1925) (*Macalla*), N. COMB.  
*agnesa* (Schaus, 1922) (*Tetralopha*), N. COMB.  
*bevnoa* (Schaus, 1925) (*Stericta*), N. COMB.  
*discalis* (Hampson, 1906) (*Jocara*), N. COMB.  
*dissimilis* (Warren, 1891) (*Roeseliodes*), N. COMB.  
*eadberti* (Schaus, 1925) (*Stericta*), N. COMB.  
*emerantia* (Schaus, 1922) (*Stericta*), N. COMB.  
*glauccinalis* (Hampson, 1906) (*Stericta*), N. COMB.  
*paschasia* (Schaus, 1925) (*Stericta*), N. SYN.  
*grenvilalis* (Schaus, 1934) (*Jocara*), N. COMB.  
*hermengilda* (Schaus, 1925) (*Stericta*), N. COMB.  
*ildefonsa* (Schaus, 1922) (*Stericta*), N. COMB.  
*internigralis* (Dognin, 1909) (*Pococera*), N. COMB.

- longistriga* (Schaus, 1922) (*Jocara*), N. COMB.  
*comgalla* (Schaus, 1925) (*Stericta*), N. SYN.  
*phaebadia* (Schaus, 1925) (*Stericta*), N. COMB.  
*vimina* (Schaus, 1922) (*Jocara*), N. COMB.
- Milgithea* Schaus, 1922
- alboplagialis* (Dyar, 1904) (*Cacozelia*), N. COMB.  
*melanoleuca* (Hampson, 1896) (*Pococera*)  
*rufiapicalis* (Hampson, 1916) (*Jocara*)  
*suramisa* Schaus, 1922  
*trilinearis* (Hampson, 1906) (*Jocara*)
- Oneida* Hulst, 1889
- grisiella* Solis, 1991  
*lunulalis* Hulst, 1888  
*luniferella* Hulst, 1895  
*marmorata* (Schaus, 1913) (*Pococera*)  
*mejona* Schaus, 1922  
*diploa* Dyar, 1920
- Pandoflabella*** Solis, new genus
- brendana* (Schaus, 1925) (*Auradisa*), N. COMB.  
*corumbina* (Schaus, 1925) (*Auradisa*), N. COMB.  
*fechina* (Schaus, 1922) (*Auradisa*), N. COMB.  
*guianica* (Schaus, 1925) (*Auradisa*), N. COMB.  
*nigrilunalis* (Dognin, 1913) (*Pococera*), N. COMB.  
*nigriplaga* (Dognin, 1910) (*Auradisa*), N. COMB.  
*olivescens* (Schaus, 1912) (*Pococera*), N. COMB.  
*remberta* (Schaus, 1922) (*Auradisa*), N. COMB.  
*stenipteralis* (Hampson, 1906) (*Pococera*), N. COMB.  
*strigidiscalis* (Hampson, 1916) (*Auradisa*), N. COMB.  
*tresaina* (Schaus, 1922) (*Auradisa*), N. COMB.
- Phidotricha* Ragonot, 1888
- Eutrichocera* Hampson, 1904, N. SYN.  
*Jocarula* Dyar, 1925, N. SYN.  
*agriperda* (Dyar, 1925) (*Jocarula*), N. COMB.  
*baradata* (Schaus, 1922) (*Pococera*)  
*erigens* Ragonot, 1888  
*dryospila* (Meyrick, 1936) (*Auradisa*), N. SYN.  
*insularella* (Ragonot, 1888) (*Tetralopha*), N. COMB.  
*paurolepidalis* (Hampson, 1904) (*Eutrichocera*), N. SYN.  
*limalis* (Schaus, 1922) (*Pococera*)  
*vedastella* (Schaus, 1922) (*Pococera*)
- Pococera* Zeller, 1848
- Tetralopha* Zeller, 1848, REV. SYN.  
*Lanthaphe* Clemens, 1860, REV. SYN.  
*Hemimatia* Lederer, 1863, REV. SYN.  
*Benta* Walker, 1863, REV. SYN.  
*Auradisa* Walker [1866] 1865, REV. SYN.  
*Saluda* Hulst, 1888, REV. SYN.

- Katona* Hulst, 1888, **REV. SYN.**  
*Loma* Hulst, 1888, **REV. SYN.**  
*Wanda* Hulst, 1888, **REV. SYN.**  
*Tioga* Hulst, 1888, **N. SYN.**  
*Attacapa* Hulst, 1889, **REV. SYN.**  
*aelredella* (Schaus, 1922) (*Tetralopha*), **REV. COMB.**  
*albiceps* Hampson, 1906  
*antilochoa* (Meyrick, 1936) (*Oneida*), **N. COMB.**  
*aplastella* (Hulst, 1889) (*Tioga*), **N. COMB.**  
*arizonella* (Barnes & Benjamin, 1924) (*Tetralopha*), **N. COMB.**  
*asperatella* (Clemens, 1860) (*Lanthape*), **REV. COMB.**  
*baptisiella* (Fernald, 1871) (*Tetralopha*), **N. COMB.**  
*basalis* (Jones, 1912) (*Stericta*), **N. COMB.**  
    *notabilis* (Schaus, 1912) (*Pococera*), **N. SYN.**  
*basilissa* (Schaus, 1922) (*Tetralopha*), **N. COMB.**  
*callipeplella* (Hulst, 1888) (*Tetralopha*), **N. COMB.**  
*cataldusa* (Schaus, 1925) (*Tetralopha*), **N. COMB.**  
*cuthmana* (Schaus, 1922) (*Tetralopha*), **N. COMB.**  
*dolorosella* (Barnes & Benjamin, 1924) (*Tetralopha*), **N. COMB.**  
*euphemella* (Hulst, 1888) (*Katona*), **N. COMB.**  
    *variella* Ragonot, 1888  
    *melanographella* Ragonot, 1888  
*expandens* (Walker, 1863) (*Benta*), **REV. COMB.**  
    *nephelotella* (Hulst, 1888) (*Loma*), **N. COMB.**  
    *clemensalis* (Dyar, 1904) (*Tetralopha*), **N. COMB.**  
*floridella* (Hulst, 1900) (*Benta*), **N. COMB.**  
*fuscolotella* (Ragonot, 1888) (*Tetralopha*), **REV. COMB.**  
*gelidalis* (Walker, [1866] 1865) (*Auradisa*), **REV. COMB.**  
    *subalbella* (Walker, 1866) (*Myelois*), **REV. COMB.**  
    *tertiella* Dyar, 1905, **N. SYN.**  
    *irrorata* Schaus, 1912, **N. SYN.**  
*gibbella* Zeller, 1848  
*griseella* (Barnes & Benjamin, 1924) (*Tetralopha*), **N. COMB.**  
*gybriana* (Schaus, 1925) (*Tetralopha*), **N. COMB.**  
*hemimelas* Hampson, 1906  
    *basigera* Dyar, 1914  
    *vanenga* (Schaus, 1922) (*Tetralopha*), **N. SYN.**  
*hermasalis* (Schaus, 1925) (*Tetralopha*), **N. COMB.**  
*humerella* (Ragonot, 1888) (*Tetralopha*), **REV. COMB.**  
    *formosella* (Hulst, 1900) (*Tetralopha*), **N. COMB.**  
*iogalis* (Schaus, 1922) (*Tetralopha*), **N. COMB.**  
*jovita* (Schaus, 1922) (*Tetralopha*), **N. COMB.**  
*maritimalis* (McDunnough, 1939) (*Tetralopha*), **N. COMB.**  
*melanogrammos* (Zeller, 1872) (*Tetralopha*), **REV. COMB.**  
*militella* (Zeller, 1848) (*Tetralopha*), **REV. COMB.**  
    *platanella* (Clemens, 1860) (*Lanthape*)  
*nigribasalis* Hampson, 1906

- polialis* Hampson, 1906  
*provoella* (Barnes & Benjamin, 1924) (*Tetralopha*), N. COMB.  
*robustella* Zeller, 1848  
     *diluculella* (Grote, 1880) (*Tetralopha*)  
*sabbasa* (Schaus, 1922) (*Tetralopha*), N. COMB.  
*scabridella* (Ragonot, 1888) (*Tetralopha*), REV. COMB.  
*scortealis* (Lederer, 1863) (*Hemimatia*), REV. COMB.  
     *slossi* (Hulst, 1895) (*Benta*)  
*spaldingella* (Barnes & Benjamin, 1924) (*Tetralopha*), N. COMB.  
*speciosella* (Hulst, 1900) (*Benta*), N. COMB.  
*subcanalis* (Walker, 1863) (*Nephoptyryx*), REV. COMB.  
     *taleolalis* (Hulst, 1886) (*Toripalpus*)  
     *querciella* (Barnes & McDunnough, 1913) (*Tetralopha*)  
*texanella* Ragonot, 1888  
*thoracicella* (Barnes & Benjamin, 1924) (*Tetralopha*)  
*tiltella* (Hulst, 1888) (*Wanda*), N. COMB.  
*vaciniivora* (Munroe, 1963) (*Tetralopha*), N. COMB.  
*vandella* Dyar, 1914

**Quadraforma** Solis, new genus

- maroniensis* (Hampson, 1916) (*Stericta*), N. COMB.  
     *lamonti* (Schaus, 1922) (*Pococera*), N. SYN.  
*mianalis* (Felder & Rogenhofer, 1875) (*Homura?*), N. COMB.  
*obliquialis* (Hampson, 1906) (*Stericta*), N. COMB.  
*seminigralis* (Hampson, 1916) (*Pococera*), N. COMB.

**Roeseliodes** Warren, 1891

- celsusalis* (Schaus, 1934) (*Chloropaschia*), N. COMB.  
*goanta* (Schaus, 1922) (*Tancoa*), N. COMB.  
*goantoides* (Amsel, 1956) (*Aroepaschia*), N. COMB.  
*ochreosticta* Warren, 1891  
*petamona* (Schaus, 1925) (*Stericta*), N. COMB.  
*pontealis* (Schaus, 1925) (*Stericta*), N. COMB.

**Tallula** Hulst, 1888

- atramentalis* (Lederer, 1863) (*Hemimatia*), N. COMB.  
*atrifascialis* (Hulst, 1886) (*Tetralopha*)  
*baboquivarialis* Barnes & Benjamin, 1926  
*beroella* (Schaus, 1912) (*Pococera*), N. COMB.  
     *bunniotis* (Dyar, 1913) (*Tioga*), N. SYN.  
*fieldi* Barnes & McDunnough, 1913  
*fovealis* Hampson, 1906  
*juanalisis* Schaus, 1925  
*melazonalis* Hampson, 1906  
*rigualis* (Lederer, 1863) (*Hemimatia*), N. COMB.  
*tersilla* Dyar, 1914  
*watsoni* Barnes & McDunnough, 1917

**Tancoa** Schaus, 1922

- arciferalis* (Hampson, 1916) (*Tetralopha*), N. COMB.  
*attenualis* (Hampson, 1906) (*Macalla*)

*calitas* (Druce, 1899) (*Deuterollyta*)  
*sphaerophora* (Dyar, 1914) (*Pococera*)  
*crinita* (Schaus, 1912) (*Pococera*)  
*erlupha* Schaus, 1922  
*metaxanthalis* (Hampson, 1916) (*Pococera*)  
*pallidifusa* (Dognin, 1913) (*Pococera*), **N. COMB.**  
*quiriguana* Schaus, 1922, **N. SYN.**  
*sinuata* Janse, 1931, **N. SYN.**  
*schausi* Janse, 1931  
*silavia* Schaus, 1925  
*ubalda* Schaus, 1925  
*Toripalpus* Grote, 1878  
*breviornatalis* Grote, 1878  
*trabalis* Grote, 1881

*Incertae sedis.*

*admotalis* (Dognin, 1904) (*Macalla*)  
*termenipuncta* (Schaus, 1925) (*Macalla*)  
*albimedialis* (Hampson, 1906) (*Pococera*)  
*albimedium* (Schaus, 1912) (*Pococera*), **N. SYN.**  
*albulella* (Hampson, 1896) (*Pococera*)  
*alnotha* (Schaus, 1922) (*Stericta*)  
*atristrigella* (Ragonot, 1893) (*Myelois*)  
*boliviana* (Schaus, 1925) (*Macalla*)  
*canutusa* (Schaus, 1922) (*Stericta*)  
*capnodon* (Dyar, 1916) (*Pococera*)  
*circumlucens* (Dyar, 1914) (*Arnatula*)  
*corumba* (Schaus, 1922) (*Jocara*)  
*cyrilla* (Schaus, 1922) (*Tetralopha*)  
*gillalis* (Schaus, 1925) (*Jocara*)  
*glastianalis* (Schaus, 1922) (*Macalla*)  
*grisealis* (Hampson, 1906) (*Macalla*)  
*maidoa* (Schaus, 1922) (*Stericta*)  
*marchiana* (Schaus, 1922) (*Jocara*)  
*marginata* (Schaus, 1912) (*Macalla*)  
*modana* (Schaus, 1922) (*Lepidogma*)  
*nana* (Schaus, 1912) (*Jocara*)  
*narthusa* (Schaus, 1913) (*Pococera*)  
*neotropica* (Amsel, 1956) (*Tioga*?)  
*nigrisquama* (Dognin, 1904) (*Stericta*)  
*nigropunctata* (Druce, 1902) (*Stericta*)  
*nolasca* (Schaus, 1922) (*Stericta*)  
*noloides* (Hampson, 1916) (*Jocara*)  
*olivescens* (Druce, 1902) (*Stericta*)  
*albulatalis* (Dognin, 1904) (*Macalla*), **N. SYN.**  
*palmistalis* (Kaye, 1924) (*Stericta*)  
*parallelalis* (Hampson, 1916) (*Jocara*)  
*pictalis* (Hampson, 1906) (*Jocara*)

- rebeli* (Hedemann, 1896) (*Homara*)  
*rubralis* (Hampson, 1916) (*Jocara*)  
*sadotha* (Schaus, 1922) (*Wanda?*)  
*subviolascens* (Hampson, 1906) (*Pococera*)  
*theliana* (Schaus, 1922) (*Jocara*)  
*thilloa* (Schaus, 1922) (*Jocara*)  
*venezuelensis* (Amsel, 1956) (*Jocara?*)  
*violescens* (Dyar, 1914) (*Lepidogma*)  
*viridis* (Druce, 1910) (*Macalla*)
- Anaeglis* Lederer, 1863  
*demissalis* Lederer, 1863
- Apocera* Schaus, 1912  
*Paranatula* Dyar, 1913  
*colorata* (Dyar, 1914) (*Arnatula*) [sic]  
*costata* Schaus, 1912  
*vincentia* Schaus, 1922  
*zographica* (Dyar, 1922) (*Paranatula*)
- Calybitia* Schaus, 1922  
*adolescens* (Dyar, 1914) (*Jocara*)  
*picata* (Schaus, 1922) (*Calybitia*)
- Geropaschia* Hampson, 1917, replacement name  
*grisealis* (Hampson, 1916) (*Araeopaschia*)
- Homura* Lederer, 1863  
*nocturnalis* (Lederer, 1863) (*Homura*)
- Incharca* Dyar, 1910  
*aporalis* (Dyar, 1910) (*Incharca*)  
*argentilinea* (Druce, 1910) (*Macalla*)
- Isolopha* Hampson, 1895  
*lactealis* Hampson, 1895
- Jocara* Walker, 1863  
*fragilis* Walker, 1863
- Micropaschia* Hampson, 1906  
*orthogrammalis* Hampson, 1906
- Nouanda* Holland & Schaus, 1925  
*agatha* (Schaus, 1922) (*Wanda*)  
*nocturna* (Schaus, 1922) (*Wanda*)
- Oxyalcia* Dognin, 1905  
*mira* (Druce, 1902) (*Macalla*)  
*ovifera* (Dognin, 1905) (*Oxyalcia*)
- Tineopaschia* Hampson, 1916  
*minuta* Hampson, 1916
- Taxa removed from the Epipaschiinae.*  
*Glossopaschia* Dyar, 1914 to **Phycitinae**  
*caenoses* Dyar, 1914  
*Pocopaschia* Dyar, 1914 to **Galleriinae**  
*accelerans* Dyar, 1914  
*brachypalpia* (Dognin, 1910) (*Pococera*), N. COMB.

- bellangula* Dyar, 1914  
*nocturna* (Schaus, 1912) (*Jocara*)  
*Proropoca* Hampson, 1916 to **Galleriinae**  
*rubrescens* Hampson, 1916  
*Stenopaschia* Hampson, 1906 to **Galleriinae**  
*Stenopaschia* Dyar, 1914, **PREOCC.**  
*Tapinolopha* Dyar, 1918, **N. SYN.**  
*erythralis* Hampson, 1906  
*gallerialis* Hampson, 1916  
*epipaschiella* (Hampson, 1917) (*Epimorius*), **N. SYN.**  
*trichopteris* Dyar, 1914  
*variegata* (Dyar, 1918) (*Tapinolopha*), **N. SYN.**  
*Xenophasma* Dognin, 1905 to **Galleriinae**  
*notodontoides* Dognin, 1905 to **Galleriinae**  
*chalcoclora* Hampson, 1966 to **Pyraustinae**, *Mimudea* Warren  
*Genopaschia* Dyar, 1914 to **Galleriinae**  
*protomis* Dyar, 1914  
*irenealis* (Schaus, 1940) (*Pseudotracha*), **N. SYN.**  
*Jocara lichfoldi* Kaye to **Chrysauginae**, *Bonchis* Walker

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